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Computer Weekly

Thursday, February 23, 1984

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MBS Rentals

University research could lead to DEC launch

by John Kavanagh

COMPUTER design research taking place at Manchester University could lead to the launch of a parallel processor by US microcomputer giant Digital Equipment Corporation.

The company's president, Ken Olsen, says that a "medium-size project" is underway to develop a machine with "a completely different architecture". It will be a "simple computer that goes very fast", Olsen says. DEC is not yet sure what all its applications will be.

Leading UK users speculate that this could be a parallel processor. Cliff Evans, deputy chairman of the users association, points to DEC's marketing agreement with array processor specialist Floating Point Systems. DEC is also working on artificial intelligence, which involves handling vast amounts of data. Parallel processing can help here.

Last year DEC took a close interest in work on a dataflow architecture at Manchester University. The research is backed by a four-year grant of almost £434,000 from the Science and Engineering Research Council. That grant runs out in September next year.

"DEC is looking at various unusual architectures and will probably pick one of them," says Dr John Gurd, one of the project leaders at Manchester.

"At present our work is speculative - but we have ideas for integrating it into DEC's existing and potential products."

"We have no close ties with any other computer companies, but our agreement with DEC is not exclusive."

DEC's interest in Manchester University's work dates from last year's announcement of the company's £7 million investment in its first research and development centre outside the US. Darryl Barhe, UK managing director at the time, said the UK would make a "key contribution" and that the centre's work would be "right on the fringe of the possible."

Olsen also promises "dramatic" price reductions over the next 18 months. He says DEC will continue to concentrate on the Vax 32-bit computers and will press ahead with multi-processing through resource sharing facilities or Ethernet local networks.



LLOYD... "We're long on diagnosis and short on action."

Tory MP slams technology policy

by George Black

A BLISTERING and unexpected attack on the government's handling of new technology was made in the Commons last week by Tory MP Ian Lloyd.

Lloyd, chairman of the Parliamentary Information Technology Committee, and MP for Havant, asked who speaks for science at the centre of government in Britain today. "I looked for science in the government's new White Paper on expenditure plans, and found half a column out of 175 pages and only two vague glimpses of policy."

Lloyd asked: "How many times has the Alvey Programme been discussed in Cabinet? It should be discussed once a fortnight - but I suspect it is discussed only once every six months."

The criticism came during a debate on a motion by Labour MP for Jarrow, Don Dixon, who called for a searching review of IT policy. He attacked "government by acronym" - a reference to NEDO and other quangos - and said there was a serious gap in the structure of parliament for dealing with IT matters. He contrasted the service provided by the US Congress's Office for Technological Assessment.

Rejecting Dixon's motion for a review of IT policy, Lloyd said: "We've produced a report after report after report. I believe we're very long on diagnosis and very short on action."

He remarked that the low priority for technology was reflected by only about two dozen members out of 650 having turned up for the debate.

This was even though technology was debated much less frequently in the House than it should be, he added.

Opening the debate, Dixon said that research and development was spread across 22 government departments with little overall plan. He quoted a prediction that

Esprit gets the go-ahead and a cash fillip

by John Riley

THE British and German governments finally agreed this week to give the financial go-ahead to the year 2000 European IT programme Esprit and has boosted the budget to £860 million.

"It is a far-reaching decision and the first optimistic decision of the first year of the programme, which will equally impress the US and Japan, which are aware that Esprit means a breath of fresh air for Europe," says European Commission vice president Viscount Etienne Davignon.

"This means that when we propose concrete actions in the telecommunications and biotechnology sectors no-one will be able to oppose us on the grounds of being too ambitious."

The decision, which follows heavy lobbying by European Commissioner for Industry Viscount Etienne Davignon, was announced at the meeting of the Council of European Research Ministers in Brussels this Tuesday. Information Technology Minister Ken Baker represented the UK at the meeting.

Esprit was set up with the help of the leading European IT companies to ensure that the European IT industry holds its own against Japan and the US in the future. The programme involves long term collaborative R & D in five areas: advanced microelectronics; software technology; advanced information processing; office automation; and computer integrated manufacture.

Davignon, who was the architect of the programme, managed to get the European Commission and national governments to agree to the technical and administrative details of the programme in record time, within a few months.

However, although the level of funding was also agreed in principle, the go-ahead was not given because Esprit became entangled in the wider European Community budgetary crisis. Neither the German nor the UK governments would agree to make an exception and give long term financial assurances to the £860 million (1.4 billion ECUs) Esprit programme, until the long term financial future of the Community funding was agreed.



DAVIGNON... Lobbied.

ACT taps shareholders for £17m

by Dave Madden

APPLIED Computer Techniques (ACT) has tapped its shareholders for £17 million in a rights issue while it awaits the outcome of its bid for the manufacturing rights of bankrupt Victor Technologies' Sirius 1 microcomputer.

Lindsay Bury, ACT's chairman, insists the two events are not connected and that ACT does not need shareholders' money to fund the bid. "It's a coincidence. We began discussions about raising cash last December; the growth we anticipate especially in export markets meant that we would need more money. Buying rights to Sirius will be funded internally."

Some City analysts were sceptical about the company's claim.

The company made a one-for-four rights issue, involving 3.3 million shares at 530 pence against a market price of 610 - which should raise £17.2 million after expenses. In the issue document, ACT forecasts that its pre-tax profits will rise from £2.17 million to £4.5 million in the year to March 1984, on turnover of £50 million. Turnover to March, 1983 should be at least £50 million.

Bury says that in the interests of "financial prudence" those estimates take no account of negotiations with Victor, and assume no sales of the Sirius 1 - though Bury emphasises that the company does not expect any interruption.

According to Bury, ACT has nothing to announce about its offer for Victor products. "Things are progressing satisfactorily," he comments.

ACT's shareholders responded enthusiastically to the cash call - its stock rose 40 pence to 650 on the news. ACT last made a rights issue in March 1983 when it raised £6 million to fund development of its Apricot portable micro.

NCR retains top cash register spot

NCR's UK subsidiary has reported a 7% increase in pre-tax profits to £26.4 million on turnover up 7% at £125 million for year ending November 30 1983. The company has been pushed hard by IBM in the mainframe market, but is still the leading UK supplier of electronic cash registers and automatic teller machines.

IBM boosts golf

IBM is trying sport sponsorship for the first time. It will be putting up £25,000 towards this year's ladies' open golf championship which runs from August 29 to September 1. In addition, there will be a special IBM trophy for the winner and a Personal Computer. Micro maker Acorn is also spreading its sports sponsorship, beyond chess and motor racing. It is sponsoring junior international tennis player Teresa Catin - from Acorn's home town of Cambridge.

Thorn purchase

THORN-BMI Computer Software has signed an agreement to buy a major US application package firm. Mike Shone, managing director of Thorn's Software Sciences subsidiary, says the agreement, which involves a series of payments, has to be concluded by April 15 but he aims to tie it up by the end of March.

Malloy quits

BRIAN MALLOY has quit as UK managing director of Storage Technology, the US company which specialises in plug compatible disc systems. This sudden move was brought about by his desire to return to Canada, his homeland, coupled with the offer of a new position that Storage Technology could not match.

Tax workers union backs agreement

by Nuala Moran

LEADERS of the tax workers' union have approved a new technology agreement with the Inland Revenue in which the Revenue says it will do its utmost to avoid compulsory redundancies as a result of the computerisation of PAYE.

At the same time, the Revenue has agreed to spread the benefits of computerisation. It will set up a joint experiment on "self determination", whereby staff will decide on their own working patterns. The union, the Inland Revenue Staff Federation (IRSF), believes that if the experiment is successful it could be extended to other parts of the civil service.

Other concessions include increased opportunities for part-time working, including job sharing and greater flexibility in hours and special leave arrangements.

The union still has to accept 4,000 job losses through PAYE computerisation before 1988, but the agreement says this will be done "by a combination of natural wastage and transfers".

The Revenue has agreed to temporary over-staffing in some offices, and says it will revise its manpower target figures up to 1988 to be as flexible as possible for shedding staff.

Other terms of the agreement include undertakings to provide full training in new technology; not to introduce shift working without consulting the union; and not to bring new technology into full operational use before information and consultation procedures have been carried out.

Members of the union have voted on the agreement.

The 438 members in the West Midlands "temporarily relieved from duty" after refusing to use VDUs have returned to work.

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Review clears way for private firms

by John Kavanagh

THE review of the government's central computer purchasing agency, the CCTA, submitted to the Treasury last week, leaves computing services firms poised to make big money from government contracts. But the review is likely to meet stiff opposition from civil service unions.

The review, by CCTA director Dr Paul Freeman, opens the way for government departments to put more work out to the private sector. It also recommends cutting the CCTA's staff by between 5% and 10% by 1985.

At present, the CCTA handles procurement and contracting for information technology products and services on behalf of the departments. It also authorises spending on information technology and supports users.

But Freeman says the departments are now experienced users and can take responsibility for their own work. And he expects the departments to take on this responsibility with no staff increases.

As a result there will be "room for greater participation by the private sector", Freeman says. And he suggests that support currently provided by the CCTA could be passed to service firms.

The CCTA, meanwhile, will concentrate on strategic information technology matters, such as evaluating new technologies, plus the encouragement of good practice and standards and the setting of information and expertise between departments.

Freeman says these changes should be introduced on April 1. The Computing Services Association is delighted with the review. Last week Peter Partington,

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DIMENT... "Sensitive to listen."

Alvey goes private for small firms' funding

by Dave Madden

ALVEY Programme director Brian Oakley has widened his initiative to encourage private funding within the Alvey programme.

Last week he made a presentation to a dozen UK venture capital groups to explore the possibility of them backing companies taking part in Alvey projects.

Oakley said he was anxious to involve "good small firms who can't meet the 50% contribution requirement. At the moment the number of small firms is not particularly impressive."

Although he didn't expect venture capitalists to fund research and development as such, he hoped that "if there is a small company that we want to involve, then that very fact might encourage venture funds to take an interest."

Companies attending the meeting included the Barclays Bank high technology ventures division, the British Technology Group, Investors in Industry and Prutech.

Tony Diment, a director of 3i Ventures, the high risk - high tech arm of Investors in Industry, said that Oakley received "a generally positive reception" and that he believed the idea of consortia was the best approach.

"It's simply sensible to listen to what's happening in research and development. At the moment it is not clear at what stage projects will become commercially viable and when propositions are nearer market we'll take a closer interest," he said.

Dr Derek Allam, chief executive of Prutech, said that the companies attending the meeting were amongst the City's few "true" venture capital outfits; companies prepared to take long term risk.

According to Allam, Oakley was hoping to promote syndicates, including a venture capital fund, with industry and the universities.

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1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

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1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

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Abstract



PICK... Giving his system a new start.

Pick breaks into IBM XT market

by Claire Gooding
DICK Pick, author of the Pick operating system, has launched his own implementation of the operating system and relational database for IBM's Personal Computer XT.

Pick's announcement of the XT implementation confounded rumours that he was planning to abandon the project, because it was behind schedule, in favour of the Revelation looklike from Cosmos.

"Drop it? I don't think so," says independent consultant Jonathan Sisk, who has been working closely with Pick Systems. "This is a breakthrough for Pick into a significantly wider market."

According to Sisk, it is possible to take any Pick software from existing systems and run it on the PC without change.

"That isn't possible with Revelation, which has many incompatibilities, and is not a complete implementation," he states. "This is complete and pure Pick: it can handle data dictionaries and programs."

The multi-user implementation uses an IBM-PC XT, with three terminals and a printer.

Pick Systems and Microdata, the first to implement the operating system, have signed an agreement with Cosmos, putting an end to speculation that Pick might sue the company.

Pick and Microdata will acknowledge Revelation as a Pick looklike, and allow Cosmos to use the name Pick in advertising material, in return for royalty payments from Cosmos. Neither company is endorsing or supplying

the product. "Pick simply has no interest in Revelation," says Sisk.

The main crowd-puller at the Reno conference was the CDI Series 1, the system which is being used to give the first public airing of Pick's long awaited new product, Release 84.

Pick told Spectrum conference that he has changed the name of Release 84 to Open Architecture Release 1.0, to reflect the considerable enhancements which effectively gives the Pick system a new start.

Pick has removed many of the limitations, such as large number handling, and changed the basic structure of the system so that it is more flexible.

Much to the relief of the flourishing Pick industry, the new release will still allow existing programs and applications to run without users noticing any difference.

"The structural enhancements mean that Pick's system can now be adapted to do almost anything people want it to do," says Sisk. One of the intentions declared by Dick Pick was to make Unix a subset of Pick, and link the two systems, with the aim of bringing a flood of applications on to the Unix market.

Over 2,000 people, many of them first-time users, have attended the Reno conference, and IBM is reported to be attending the conference in force.

"I doubt if IBM will sign a direct licensing agreement with Pick," comments Sisk, "but it is very interested in the system as a way of selling more Iron."

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BT plans VDUs in phone boxes

by Donald Kennett
BRITISH Telecom is planning to put touch sensitive VDUs into telephone boxes to give the public access to its new computerised directory enquiry service.

The computerised directory is to go into service in the second half of this year, initially at three centres in the North, the Midlands and London. It is primarily intended for use by directory enquiries operators and it is planned to cover the whole country by early 1986.

But when the £32 million contract was awarded to Standard Telephones & Cables last May, BT said that a gateway to Prestel would be provided on the system early in 1985. The service could then be accessed directly from home computers and videodata terminals.

BT now plans to run a trial to evaluate public reaction using touch-sensitive screens from its City Business System money dealer's terminal installed in call boxes.

If these arrangements are

successful, paper telephone directories could eventually be done away with, as the French PTT plans to do.

The French plan - first announced in 1977 - have suffered considerable delays, but BT's attitude is that it prefers to set up services that are commercially justifiable on a shorter timescale than that of the ambitious but risky French plan.

If BT charges at cost for its directory enquiry services, an electronic version could soon become cheaper than operator-based service. BT last year backed down in the face of objections from the Telecommunications Users Association from the idea of making any charge at all for a call to directory enquiries.

BT argued that the public made no objection to paying for a call to British Rail for a timetable enquiry, or for a platform ticket when they were not going to travel on the train.

The Post Office has no directories to look up the addresses for

use with its mail service - users rely on their correspondents telling them.

Alternative technologies for the call box devices include speech synthesizers and touch-sensitive keypads.

Another possible technology, shown by IBM at Telecom 83 in Geneva in October, allows all the elements on the display to be integrated into a single chip, enabling display systems to be manufactured at very low cost. The 20 by 23mm device generates a visual image on its surface and this is then enlarged optically to make it intelligible.

Picture elements on the surface of the chip change from colourless to purple when a voltage is applied.

The central system for the directory enquiry service is to be based on software from Computer Consoles in the US, running on Digital Equipment PDP-11/44 and CCI Power 5 minis. It will be updated daily from BT's ICL 2900-based directories database.

Lamsac woos the councils

by Nuala Moran
THE Local Authorities Computing organisation (Lamsac) is campaigning to drum up support among district councils on proposals to develop a computer system for land charges registers.

According to Ken Davie of Lamsac, the support of about 50 of the 400 or so authorities is needed for the project. "There does seem to be a lot of interest in the project, although some authorities manage to perform well using manual records."

A working party was set up to look at developing a standard system in July 1983. It has just completed its initial feasibility study, which will be circulated to local authorities, accompanied by a questionnaire.

Land charges registers list details of any charges relating to individual properties, for example private street charges. These are all details which solicitors require for property conveyancing.

In addition, solicitors need other information relating to a property, for example, whether it is in a smokeless zone or an area of special beauty.

"This means that computerisation is not straightforward because there are so many different bits of the local authority which could have information on a purchase or sale of land. The other problem is that local authority computers vary and a standard system would have to run on many different kinds of machines," says Davie.

The Housebuyers Bill, the pri-

vate members bill promoted by MP Austin Mitchell to make house buying easier, included a clause calling for the computerisation of the land charges registry. It remains to be seen whether this will be included in the government proposals which will supersede the Mitchell bill.

According to Davie, "there is a definite need to improve efficiency in dealing with land charges".

Lamsac has also announced a review of computer applications in the social services to help local authorities keep up-to-date. Part of the Lamsac Social Services Applications Group is drawing up guidelines to help local authorities work out codes of practice for personal records systems, once the Data Protection bill is passed.



SPL's new system aims to reduce Thames barrier operating costs.

SPL gets Thames barrier job

by Nuala Moran
A MANAGEMENT Information system which will reduce the costs of operating the Thames flood barrier is to be supplied by SPL, International.

The barrier is designed to limit the Thames during a tidal surge, but allow access to river traffic at all other times.

The system is based on a DEC Vax 11/750. It will help avoid the

necessary closure of the barrier and in minimising the length of each closure.

This will reduce operating costs and reduce disruption of the river's traffic.

Barrier control strategy will be determined by a mathematical model which will be based on river tidal, meteorological and flow-down conditions. The system will be linked to an IBM main-

frame in the GLC's headquarters at County Hall, and will also be used to produce forecasts of possible non-tidal flooding in the London area.

The contract to supply the system, worth £400,000, was awarded by the GLC. Spanning one third of a mile across the Thames at Woolwich Reach, the flood barrier is due to be opened officially in May.

SALES BRIEF

Swedes pick Sperry's \$4m giant

THE Swedish telecommunications administration has ordered Sperry's biggest and most powerful computer, the 1100/92 minicomputer, which is valued at \$4 million. It will be installed in Stockholm later this year, when it will support 3,000 terminals for computer-assisted work in management and provide facilities for 2,000 more.

The system will replace a 1100/83s, which will be transferred to test work.

BHS contract

BRITISH Home Stores has placed a £400,000 contract with Compu-Cash Processing of Telford for 31 microcomputer-based cash management systems to be installed all over the UK. The systems are designed to bridge the gap between point of sale and management information by providing status on item movement, cash flow, operator efficiency, income per square foot, seasonal fluctuations and sales trends.

HP wins order

HEWLETT-PACKARD has won a £2.1 million order from Medi Box for software and hardware to streamline its production planning operation. The hardware will consist of 57 HP150 touch-screen personal computers linked to 10 HP3000 minicomputers, eight HP3000 microcomputers and three HP3000 centralised administration and development work.

That's the ticket

THE Bank Settlement Plan, devised by 30 airlines to simplify ticket issuing procedures for travel agents, will be implemented on Datasouth DS180 matrix printers. These will be installed at the 20 travel agents that make bookings through British Airways' travel recreation subsidiary.

Course support

DEBTA Computer Aided Engineering of Birmingham has won a £100,000 contract to support Warwick College of Technology in its work for the Manpower Services Commission on the Open Tech project, which will set up technician and supervisory level courses for learners to take at their own pace.

BT spends

BRITISH Telecom's National Networks division has ordered £400,000 worth of Alter microcomputers and terminals from Windows-based NBS Micro for use in planning track services. The hardware is 26 Xerox-based 16-bit Altos 986 micro and 186/2 micros and 124 Altos II smart terminals.

Checks on yachts

BEDFORD Computers' latest use of its Yacht Prediction Program is to the Greek Yachting Association. The program runs on an Apple IIe in the year since its launch it has been sold in 20 countries to help check yachts for performance and for compliance with international off-shore racing rules. The British Admiral's Cup team is one user, and the company reckons its program has been used in designing £10 million worth of racing yachts.

Police deal

IAL Gemini has beaten Honeywell and Leasco to a £1.2 million contract from South Yorkshire Police for a turnkey command and control system. The system is to be installed by the end of next year when it will support terminals in nearly every police station in the county. It will be based on Data General hardware running IAL Gemini software and it will support street indexing, incident handling and message switching.

Zenith jumps into compatible market

by John Kavanagh
US television and radio giant Zenith has jumped into the IBM-compatible personal computer market with desk-top and portable models.

Zenith Data Systems is just getting going in the UK and Europe, but it claims to be the world's number four supplier of microcomputers costing between \$3,000 and \$6,000 - after IBM, Tandy and Commodore. Its parent, the \$1,300 million Zenith Radio, is a household name in the US, because it is one of the top two television manufacturers.

Zenith says it can undercut IBM and other competitors by up to 21% because it makes its own screens, power supplies and other components - and sells them to those competitors.

The company is close to winning orders for the new products totalling over \$50 million from four big US OEMs. And if its US distributors' initial order rate continues its total business from these two sources will be over \$110 million this year, compared with \$70 million from US sales of its

existing Z-100 eight- and 16-bit computers last year.

The new Z-150 and Z-160 machines have the same Intel 8088 processor as IBM's product. They run Microsoft's MS-DOS operating system, on which IBM's PC-DOS is based. Compatibility is ensured through firmware.

On the hardware front the machines have four expansion card slots, compared with two on the IBM Personal Computer. In addition two standard serial and one parallel port are built in; IBM extra boards are needed.

On the software side Zenith is supporting Microsoft languages and word processing software and the Lotus 1-2-3 modelling package, with its own manuals.

US prices start at \$2,699 for a single floppy disc version with 128K of memory. A model with two floppy discs and a 10.6-Mbyte Winchester disc costs \$4,799.

UK managing director Terry Hart says UK prices will start at around £2,100. The machines will be launched in the summer. The company has 15 UK staff and 70 dealers.

Small aid streamlined

by George Black

THE government will announce plans in May to streamline its aid to small businesses. Junior Industry Minister David Tluppi told the parliamentary information technology committee that he was "repackaging" the present 88 official assistance schemes into four or five and would complete the work by May.

"We are confusing the very people we are trying to help," he says. The new categories will retain the current Support For Innovation grouping and consolidate

various advisory projects into one.

He says there is no evidence of demand for the £75,000 ceiling on the amounts eligible for the loan guarantee to be lifted. The average application is £33,000, he says.

The loan scheme, which runs out in May unless renewed, has a current failure rate of 8%. But it is defended by Barclays Bank corporate manager, Peter Hornby, who claims that the failure rate is falling and will come down still further. "It is better balanced now and, given a chance, should succeed," he told the committee.



GWYN JONES... "It's a major endorsement of our product."

Harris aims to manufacture in UK later this year

by Nuala Moran
HARRIS, the US electronics giant, will start manufacturing in the UK later this year. Products will be for the office automation market, which it will be attacking with its merger partner, business systems supplier Lanier.

Lanier's UK managing director, David Reavley, is not able to com-

ment on where the factory will be because, he says, "negotiations are at a very delicate stage. We are looking for somewhere at the right price and with a high technology workforce". He expects the factory to be operating by the second half of this year.

Both Harris and Lanier machines will be made at the fac-

tory, but, Reavley says: "It's difficult to specify at this stage exactly what we will build there, we're looking at several product lines."

Meanwhile Harris is busy integrating Lanier marketing operations with its own in Europe, Africa and the Middle East, bringing them under the umbrella of Harris Systems international divi-

sion in Geneva.

Lanier offices here in the UK and in Germany will be merged with Harris subsidiaries. Plans have also been announced for interfacing the two product lines. Harrisnet, the LAN for the Harris 9000 office system, will become the standard for all Harris and Lanier products.

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CHRISTENSEN... "Places where Ethernet has an application."

US company fetches its local network to the UK

by Donald Kennett

US DATA communications firm Network Systems (NSC) is bringing its 10 Mbit-per-second local area network Hyperbus to Britain - at prices down to \$250 a port.

The two-year-old product joins the product that has fuelled the company's growth to \$10 million profit on last year's \$47 million sales, the Hyperchannel 50 Mbit-per-second network.

And the company is whipping up enthusiasm for its next product up the range, a 275 Mbit-per-second network called Data Pipe which it plans to launch around the end of the year.

Hyperbus has been on sale in the US since 1982, but only 35 systems have been sold, mostly into sites that were already using Hyperchannel for their high-speed mainframe links.

Three Christensen, one of the three ex-Control Data engineers who founded Network in 1974,

explains: "Hyperchannel is a \$40,000 box and you can have two of them to a mainframe port, so that's an \$80,000 port cost. Hyperbus uses \$4,000 boxes and you can hook 16 personal computers or whatever on to them. So at the other end that's a \$250 port cost."

"We haven't priced the Data Pipe yet, but it will be expensive because it's higher up the hierarchy. We haven't had any competition with Hyperchannel and I think it will be the same with Data Pipe, but we don't know how big the market is."

"Many of our customers have campus type environments and very high speed applications. For IBM to do it probably wouldn't be worthwhile, but for us it is."

Hyperbus is a proprietary system that runs at the same speed as Ethernet, but until open systems standards cover a more complete range of networking activities, its makers will have some

justification in claiming greater universality.

But Christensen is confident: "I think Ethernet will be a standard for a certain group of users - there are places where Ethernet has an application. But IBM, AT&T and Wang aren't using it and who the hell else is there? Users are in no doubt that there will be multiple standards."

Data Pipe is an optical fibre based high-speed "backbone" network that can run for 20 kilometres and can make full use of public wideband digital transmission facilities such as satellite links and British Telecom's Megastream circuits.

"I never ask them what they are going to use all that data for," says Christensen. "A local area network is a multiplexer of applications into high-speed circuits, our friends at Cray say 'what are you going to do when we have a 200 megabit channel?' and we say 'when you're

ready we'll be ready."

"The other thing we're working with is optical disc storage. Its capacities are so tremendous that you can't talk about 10Mbytes, just your arithmetic tells you're going to take 27 years just to fill it up. It needs gallium arsenide technology, VLSI to make it economical, a protocol structure and addressing theory."

Network Systems has filed a patent suit against Masstor prompted by Masstor's announcement that it will make its own work boxes to run the software previously sold with Network Systems' adapters. "There's enough evidence in our minds that they're infringing on our patent," comments Christensen.

"There's a counter-suit that says since they've never shipped a product there's insufficient ground for a suit, and an anti-trust suit that says we're trying to dominate the market."

Olivetti plugs three gaps

by Keith Holder

OLIVETTI has taken three new IBM plug compatible computers on board in a renewed attempt to beef up its efforts as a big computer systems vendor.

Two of these are Hitachi machines already available in the UK through National Advanced Systems (NAS) and BASF, which introduced them last month to compete with IBM's 4381 mainframe.

The third machine is a new diadic (dual) processor from US independent IPL, the 5350, which is ready to be shipped now.

This is a three mips machine, which will form the top end of Olivetti's IPL range.

Users of existing IPL machines will not be able to upgrade,

however, as the new machine has a redesigned chassis, incompatible with the old components layout.

Olivetti badly needs to get into the market and sell some machines if this latest attempt to push in on the PCM market is to succeed.

Jeff Evans, manager of the revived plug compatible computer division, says that he expects to be announcing some sales soon, a result of a concerted effort by his salesforce, which can now deal solely with the computer market.

He expects to gain "a significant share of the PCM business" in the UK over the next two years and would like to see this reach 10% in some sectors, like terminal sales.

He refutes recent reports that the company will rely on machines from US maker CFS.



EVANS... Expects "significant share of PCM market".

IDPM helps its members recruit

by Philip Hunter

THE Institute of Data Processing Management is to help its members to recruit permanent computer staff. The institute will charge members a placement fee equal to 5% of the first year's salary for each programmer, analyst or data processing manager they appoint through the service.

Individuals who belong in the institute will also be able to use the service, called the IDPM People Placement Scheme, to find jobs.

The institute aims to build a register of available staff along the same lines as recruitment agencies, to match applicants with jobs.

The register will be split into three categories: one for applicants in the £20,000 plus salary bracket; a standard category to embrace the majority of programmers and analysts, as well as DP managers; and a trainee category for graduates and people from government youth training schemes.

"We are offering to find the ap-

plicants and do all the administration concerned," says David Roberts, consultant at Igor Management, of Croydon, which is organising the scheme for the institute. "But we're not offering to discuss vacancies with employers nor to interview short-listed applicants."

Many of the recruitment agencies do interview and discuss vacancies. However, Igor is to offer a recruitment service, including technical interviewing, to supplement the scheme - at a fixed charge of £35 an hour.

This means that the cost of hiring someone for a salary of £15,000 would be around £1,100, assuming a day and a half of interviewing and consulting. This is less than 10% of the first year's salary, and considerably less than the established agencies charge, according to Roberts' calculation.

The service is also open to the 2,000 individual members of the IDPM, who might want a job.

Data General pays staff to fill vacancies

MINICOMPUTER manufacturer Data General's UK operation is offering its staff up to \$1,000 if they provide leads to fill vacancies. There is also a special bonus quoted in Sterling of £250 to staff referring sales executives joining from Digital Equipment Corporation, Hewlett-Packard and Prime.

Data General employees get \$750 for referring systems engineers, field service engineers, technical support and repair centre engineers and sales executives, and \$1,000 for each subsequent referral. Lower bonuses are offered for

employees recommending clerical and secretarial staff.

"We find that when people are recommended by our employees, they stay, are more productive and fit in well," explains Data General's UK and Ireland general manager, John Dougall.

In order to get the cash award, the recruit has to be on Data General's payroll for six months. At the end of each fiscal year employees who have found recruits get another chance for extra cash, as their names are put in a draw for a \$600 and a \$400 prize.

Word firms dig deeper

by John Riley

TWO traditional word processing companies announced last week that they are pushing deeper into the information processing market.

Wordplex launched its 8000 Integrated Office System, which allows up to 24 terminals and 24 printers to share a 900 Mbytes hard disc storage.

On the same day, and at the same venue - the Info 84 exhibition at the Barbican - CPT Corporation announced its SRS 45 shared resource system which allows up to eight terminals to share word and data processing files on a 30 or 60 Mbytes hard disc, and also Phoenix, its new chip-packed information processor.

The Wordplex 8000 system, which uses Wordplex's proprietary Gemini operating system, is the fruit of three years R&D.

"This is not insignificant froth," says Wordplex's chief executive Harry Mallinson, "it represents the broad architecture on which we are basing our future, and will

allow users to upgrade painlessly and migrate to more cost effective technology."

The 8000 is based on a 16-bit Zilog 8000 processor and offers up to one Mbyte of main memory, and has five built-in managers slots to control workstations, files, printers, applications and communications. A medium configuration price works out in the region of £20,000.

CPT's shared resource system is based on a Zilog Z80 chip running at four MHz, and the basic price for a 30Mbyte version is about £6,000. CPT's Phoenix system has two eight-bit chips - Intel's 8085 and 8041 - and three six-bit chips - Intel's 8086, 8088 and 8089. The Phoenix, which costs around £17,000, allows merging of text, data and graphics.

"The Phoenix won't supplant our current 8500 series," explains CPT's UK managing director, Kathy Devany, "it will work alongside our earlier systems and will support the development of advanced applications and software features for years to come."



DEVANY... Confident for years to come.

How to export more

by Nuala Moran

THE British Council wants exporters to know that it can help them get business overseas - as it has already for ICL on a £500,000 contract in Singapore.

ICL was contracted by the government of Singapore to develop a centre for computer studies at Ngee Ann polytechnic.

According to Ashok Hegde, manager of strategic planning at ICL, "Singapore wanted an integrated solution, that is it didn't just want pure training or academic standards or systems. By coordinating resources with the British Council we ended up with a unique package which the Singapore government had no option but to take."

The council recruited people from the UK to teach at the centre and arranged training in the UK for Singaporeans who will eventually staff the centre. Hegde explains ICL's view: "The UK leads in offering high value added services. Training is critical to this."

Bill Harvey of the educational contracts department at the British

council says: "There is a growing emphasis by overseas governments and international lending agencies on training which is integral with projects as opposed to stand-alone education of ad hoc on-the-job training."

"A number of companies bidding for large contracts find themselves suddenly confronted with training demands. We can help because we have links with universities and institutes, we have specialist staff and we have a network of overseas representation in 81 countries."

"This puts the council in a strong position to help UK companies organise training. As the Skills Gap, a brochure which explains the services the British Council offers, is now available. The science and technology group of the council is also helping to promote the Micro in Education Programme. In conjunction with Export/IT it has helped set up exhibitions in Saudi Arabia, Spain, Italy and Germany."

* Available from The British Council, 27 Spring Gardens, London, SW1A 2NN.

UK distributor markets top Spanish system

by John Riley

MOORGATE-based distributor Sisco is to market one of Spain's top selling systems in the UK because it is convinced that Spain will become a major micro-maker of the future.

Called the Business Express, the systems are built in Spain by Seccolox (Sociedad Española de Comunicaciones e Informatica), the government-owned commu-

nications agency in which Fujitsu has a stake.

The dual processor system, which has a Zilog Z80B and an Intel 8088 chip, supports the Oasis operating system, as well as CPM and MS-DOS.

Patrick O'Brien, sales director for Sisco (Small Information Systems Company), believes that the Oasis operating system still has a big future.

"Since 1979, several thousand Oasis machines have been sold in Spain. Spain has standardised on Oasis, and the best brains in Spain end up in Seccolox."

Sisco places much importance on the long viability of the Spanish-built Business Express. "Very few distributors are offering their dealers a profitable future that allows them to do the job of installing business computers properly," says O'Brien.

"I equate Seccolox with the Japanese car industry of 10 years ago," he adds. "The company puts a lot of effort into quality control."

Sisco has already interested 18 Oasis systems houses in the machine. According to O'Brien, a typical configuration including four screens, business software and two printers, costs around £20,000.

BT approvals board comes up for appraisal

by Donald Kennett

BRITISH Telecom's equipment approval board is up for appraisal itself, just as it has moved into gear in authorising telecommunications kit for attachment to BT's network.

Consultancy Brinn James is to report on the British Approvals Board for Telecommunications approvals procedures to the Department of Trade and Industry within the next few weeks. Suppliers have complained of delays and the cost of gaining the board's approval.

The board had only one extension telephone to its credit for most of last year, but the number of approval certificates it has issued reached 16 last month. And a growing number is in the pipeline.

Director John Vevors is not entirely satisfied. He says: "Things are moving, but I would like to see them moving a lot faster. I have yet to get it into top gear."

The approvals board was set up in May 1982 as a result of the British Telecommunications Act 1981 to pave the way for companies to sell telecommunications equipment on the open market. But it has suffered a string of problems.

At the request of ministers, it was geared up to meet a very much higher level of demand than has materialised. The seven-strong engineering team has not been idle, because there has been plenty of work to do in re-working the standards specifications produced under pressure by committees of the British Standards Institution; re-writing test equipment software to accommodate the modifications; and managing the Department of Trade and Industry's interim approval schemes.

"It has also been developing its own schemes for equipment not covered by standards, for example telex and cellular radio. Vevors elucidates: "We recently announced a scheme for telex equipment. For cellular we shall be issuing a schedule (standard) produced by a group set up under the auspices of the Department comprising representatives of equipment manufacturers, operators, BT, the government and ourselves - all the interested parties. Ultimately it will be covered by this like yesterday."

The interim approval schemes for telex and cellular radio have been successful. But the interim approval scheme for PABXs has not. Vevors says, "The interim approval scheme for PABXs has not been successful. It has no scheme for PABXs themselves. Vevors says, because the appropriate standards have yet to become available."

The organisation was set up with a £200,000 loan from the government, the industry and BT. But that was very rapidly spent. Vevors says: "It has now negotiated an interest free loan of another £200,000 from the government (the loan is self-supporting, as well as the supplementary test equipment needed for cellular radio).

"The interim approval scheme for PABXs has not been successful. It has no scheme for PABXs themselves. Vevors says, because the appropriate standards have yet to become available."

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HIGGINS... "The Compass is not a sewing machine."

Space micro unveiled

by John Riley
CALIFORNIAN micro maker Grid Systems last week launched its 16-bit portable microcomputer which weighs in at just under 11 pounds, including a flip-up electro-luminescent flat screen.

Called the Compass, the micro has already been up in the Space Shuttle twice, has been used by the US marines in Grenada and Beirut, and is used by 400 US government tax fraud investigators.

The machine has an Intel 8086 chip and also an 8087 arithmetic handling chip, and offers 256 Kbytes of RAM and a further 384 Kbytes of bubble memory for \$5,195.

An Intel 80186-based Grid Server links up to 44 Compass micros, including 12 ports for telephone downloading. A typical Grid Server capable of supporting 16 users costs around £20,000.

"This is not a sewing machine," says Roger Higgins, Grid's vice-president for international sales, drawing attention to the growing band of manufacturers who are calling their machines portable. "If you can't get it in a briefcase, can't drop it or if it needs an external monitor, it isn't portable."

Higgins does not mind if the Compass is dropped: "It will survive a force of 135 g," he explains.

A military version, which conforms to the US Defence Department's toughest specifications, is also available. That version is two pounds heavier than the commercial version, and has 512 Kbytes of RAM and an internal fan and filter for the screen. This version has a US base price of \$10,500.

The commercial version is being distributed in the UK by Theme Systems, which also distributes the Onyx microcomputer.

Grid was founded in 1980 by Englishman John Eilenby, who was formerly with Xerox. Initial investors included Gene Amdahl, and Ray Williams, founders of IBM plug-compatible mainframe manufacturing Amdahl, and also by leading figures in non-stop microcomputer company Tandem. Grid has sold 4,000 in the US.

data processing

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HP chief attacks US chip makers

by Keith Holder
US SEMICONDUCTOR manufacturers have been slammed by mini and micro maker Hewlett-Packard over the reliability of their memory chips.

Robert Frankenberg, the company's general manager for computer systems, has pronounced that Japanese chips are up to three times more reliable than the US equivalent.

He says that "despite significant efforts on the part of the US chip makers to improve product quality, the Japanese are still ahead."

This is in contrast to statements made last year by the company to the effect that the US products were up to scratch and were running neck and neck with the Japanese.

Frankenberg's statement has taken some Hewlett-Packard executives by surprise.

In a recent news release Franz Nawratil, general manager for data systems, confirms that US

suppliers are able to meet specifications for reliability.

He adds: "The reason the Japanese have been first to qualify with the company is that they have made their devices available first."

"The scenario governing our use of 64K RAMs showed this, and I don't foresee any reason why it should be any different with the latest 256K chips," he says.

Hewlett-Packard buys 64K chips from eight companies at present, four Japanese suppliers and four US suppliers.

A company spokesman says that the comments made by Frankenberg and Nawratil might differ because they were working on different ranges, where reliability requirements could differ significantly.

He adds: "Although the company is continually looking at the quality of components used in our machines, we would not make a hasty decision, or cancel purchase

orders on the strength of one statement."

In the race to qualify with the company with 256K dynamic RAMs (DRAMs), three Japanese firms have already crossed the line, while the US companies have yet to score.

Quality aside, the Japanese have been steadily gaining market share with their memory devices in the point where last year they achieved 46% of the world market, according to market research company Dataquest.

The spokesman said that previous pronouncements had been taken seriously by the US industry, and that Frankenberg's statement could be a tactic to spur it into making further efforts to "deliver the goods" more quickly.

He admits that this might be difficult as the current high demand for chips is keeping all the major manufacturers running at full capacity, and making them sell more devices than they can make.

Micro buys cut-price disc drives

MICRO Technology of Tullahoma, Tennessee, has signed an agreement with General Automation to buy £1 million worth of the latter's Alpha-10 mini-cartridge disc drives for which General Automation is exclusive main distributor outside the US. The disc drives of this size of order has enabled the company to cut the end-user price of its Honeycomb 20MByte disc drive packages by £55 to £120. The drives are designed for IBM-PC market.

Stearns supplier

AM INTERNATIONAL, the US multinational manufacturer of printing machines and phototypesetting equipment, is to distribute the Stearns 16-bit micro in the UK. Popular in the US, the Stearns micro is Intel 8086-based (running at eight MHz) with optional 8087, has 128 Kbytes RAM expandable to 896 Kbytes, and offers CP/M 86 and MS-DOS operating systems. Prices start at £2,500.

Denton to China

BOB DENTON, managing director of Sinclair distributor Pico Holdings, is taking a party of peripherals and software suppliers to China next month. "China is very hungry for British products," he says, "but it took Sinclair six months to get government approval to export there. The Americans are exporting 16-bit micros to China now, whereas we're having trouble with anything over eight bits and four MHz."

Intelsat contract

THE international satellite communications organisation Intelsat has contracted for \$1.2 million worth of computer system analysis, design and development work by Computer Sciences to be teleported, trading and networking facilities of the Intelsat VI series of satellites that are due to go into service in 1986. The contract has renewal options that could be worth \$4.9 million over three years. Intelsat VI will have double the capacity of Intelsat VAs - more than 30,000 telephone circuits.

Masterline public

PLESSEY's Masterline key telephone system, which handles up to six lines and 16 extensions, has been approved for connection to the public network under the Department of Trade and Industry's interim approval scheme.

Dataquest inquiry

CALIFORNIAN information technology market research company Dataquest is to conduct a joint programme with its parent company, A. C. Nielson, to investigate the personal computer consumer market, and will monitor 20,000 households quarterly. Dataquest is also soon to expand its UK operations to include services to cover the printer and telecommunications industries.

VLI sponsorship

THE business microcomputer category of the 1984 British Computer Awards will be sponsored by the VLI group of computer staff recruitment agencies. VLI says the decision to sponsor the award follows two independent surveys which found that the use of microcomputers in business was of major interest to programmers and DP staff seeking new jobs.

Finar system

FOLLOWING the article on software distribution in the February 16 edition of Software Monthly, we wish to make clear that Corporate Modelling Consultants Limited develops and markets the Finar financial modelling system, and not the Final system.



STODDART... Estimated only 300 GPs use micros.

System will speed up drugs reports

by Nuala Moran
A SYSTEM to speed up the reporting of adverse drug reactions is being developed by Baric Computer Services in collaboration with the medicines division of the Department of Health and Social Security.

The sum of £25,000 has been made available to develop the system, which will initially collate drug side effects reported by 3,000 participating GPs.

A DHSS spokesman says: "The average GP probably reports about half a dozen reactions a year, so we won't be providing terminals just for that. But obviously there are lots of other applications coming along, and the DHSS wants to make sure the drug reporting and other applications are standard."

In fact there is a long way to go before all doctors are using a micro. In a survey published last week Dr Norman Stoddart, ICI computer fellow, estimated that only about 300 out of the country's 25,000 GPs use a micro. And he showed that doctors are using their

micros for paperwork, rather than for diagnostic purposes.

Of those GPs using micros, 40% use them for repeat prescriptions, 34% for special registers and 34% for patient recall. Only 8% are involving the computer in doctor-patient consultation for diagnostic purposes.

The DHSS spokesman says that the department also wants to see micros used in preventive medicine, such as monitoring repeat prescriptions, calling in patients for vaccinations or cervical smear tests, and eventually for drawing up health statistics.

Doctors wishing to get into micros have to pay for the equipment themselves, though they can get assistance from the GPs' Finance Corporation, which exists to help with finding premises and providing office equipment.

Stoddart criticises this scheme because it limits the choice of micros to two British makes. According to Stoddart, this means that they cost more than other micros on the market.

Apex claims 50 jobs go for every one created

by John Kavanagh
FIFTY office jobs are lost for every one created by new technology - and the staff who remain get none of the benefits in terms of extra leisure time or pay.

These facts emerge from a survey in the Midlands by the professional, clerical and computer staff union, Apex. Apex calls on unions to "redouble their efforts" to win shorter hours, longer holidays and earlier retirements on full pension for their members.

As well as cutting jobs, technology is changing the face of society, the survey found. Nearly a third of staff questioned said their jobs had become less skilled and 40% of jobs had become more skilled.

"There is a danger that we will end up with a large group of extremely skilled people and another group who are purely machine-minders," the survey report says. Just 3% of companies had negotiated shorter hours and none had offered longer holidays. This, the report says, is a "contradiction" because technology will lead to more leisure time, says Apex.

"What is happening is that we are moving into a two-tier society

- those with jobs and those without jobs - and those with jobs will continue to work the same number of hours."

The survey again raises the questions of whether display terminals harm health. Over 60% of union representatives said their members blamed new technology for certain complaints. The most common were eyestrain (56%), headache (52%) and backache (38%).

In addition 48% of people said technology caused irritability and 43% said it induced stress.

A minor statistic from the survey is that 12% of companies use agency staff. Apex says this has "significant implications" for union members, as agency staff usually have worse employment conditions than do full-time people.

The union concludes: "Unless new technology is introduced in a controlled and responsible fashion - and is used to create wealth, rather than simply eliminate jobs - its benefits will be very limited indeed."

Leader comment - page 15.

Telecomms Bill survives Lords

by Dave Madden
THE government has steered the Telecommunications Bill through its committee stage in the House of Lords relatively unscathed, despite a rough ride from the telecommunications manufacturing lobby.

It was only defeated on amendments to safeguard rural services and on the issue of telephone tapping only, although the Bill will face further amendments when it goes into report stage in March.

The telecommunications industry's objections to the Bill have centred on British Telecom's licensing arrangements, the prospect of BT looking to foreign equipment suppliers at the expense of the domestic industry, and the issue of BT's right to manufacture.

Dealing with the licensing arrangements, Lord Cockfield, Chancellor of the Duchy of Lancaster and the minister in charge of the Bill, said that the government would table an amendment for the report stage of the Bill, providing

that, before a public telecommunications system came into force, the text of the licence authorising the running of the system should go before the Commons.

On British Telecom's right to manufacture equipment, Lord Mackay of Clashfern, the Lord Advocate, said that the government accepted the distinction between running a public telecommunications system and manufacturing apparatus for it. Manufacture by an operator should be in a different company from that which ran the network.

The government is to put that policy into a condition of the draft licence.

The government also believes that there should be a clear prohibition of cross subsidisation between the two activities.

At the same time, Lord Mackay stressed that the government wanted to encourage BT to involve itself in research and development. Lord Weinstock, managing director of GEC, objected to the

government's insistence that the Bill should provide adequate safeguards for the home telecommunications industry. Lord Bruce of Donnington, chief opposition spokesman, said that Labour peers would table an amendment to provide specific protection for British manufacturers of telecommunications equipment at the report stage.

The Bill goes into report stage in the House of Lords on March 12, and the Department of Trade and Industry expects it to receive a third reading before the end of March, and to go back to the Commons in April.

The government is set to change the law to relax the rules of the £4 billion British Telecom share flotation this autumn. It is disapplying sections of the Prevention of Fraud (Investment) Act and the Companies Act of 1948.

The application forms due to be sent to BT's 17 million individual telephone subscribers will not be accompanied by a full prospectus, that would be too expensive.

Xerox in US cuts Star price

XEROX in the US has knocked a third off the price of its Star workstation and brought in two cheaper versions for standalone and remote operation. The price of the original Ethernet version is now \$9,995, rather than its previous \$15,000.

Rank Xerox in the UK has not announced plans to follow suit.

Sir was launched in 1981 and it pioneered features such as the mouse for cursor control, symbolic "icons" for file management, multiple "windows" for task management and the bit-mapped screen for high-resolution graphics. These features are being taken up enthusiastically by other micro makers, most notably Apple with the Lisa and Macintosh. But Star has not sold in large numbers and the company admits that price has been a factor.

Apple's Lisa, which closely follows the Star model, suffered the same problem. When its baby brother, Macintosh, was launched in January, a new Lisa version was announced at less than half the original price.



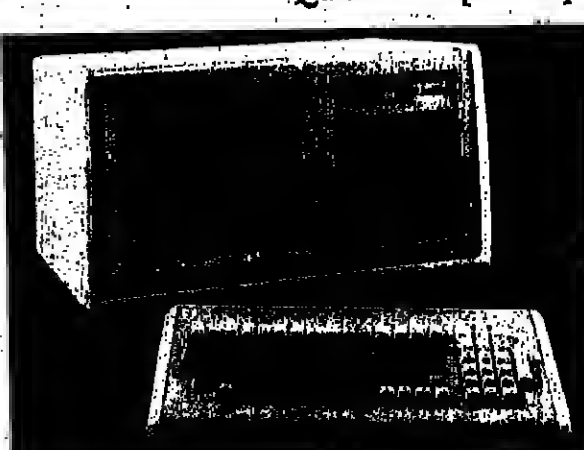
This is ridiculous!

Don't put your customers in this position by selling PCs to businesses that are liable to grow. We all know that a business might start by buying a computer with one job in mind, but it seldom stays that way. If it's bought for accounting, they'll soon get the idea of adding financial planning, word processing and numerous other applications.

In a business that's growing that means more and more people will want to use the computer, eventually at the same time. And if you've sold them a PC they can't.

On the other hand, if you'd sold them an Equinox multi-user multi-processor system at the start, they could have expanded as the need arose.

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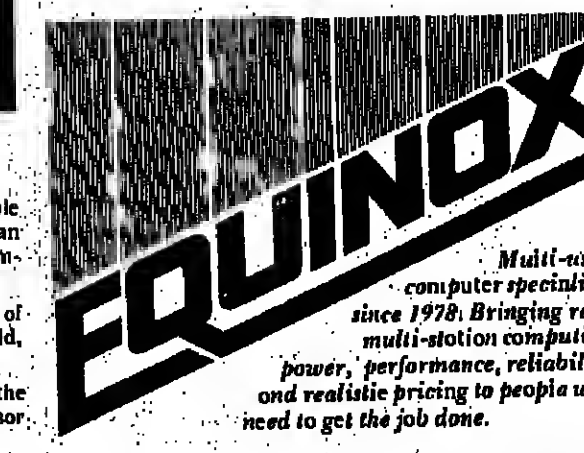
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Generator will get Euro offices

PLANS are going ahead to set up European offices to sell the database and applications generator, The Sensible Solution. The database has been making inroads on Ashton Tate's dBase II territory. Originator O'Hanlon Computer Systems is planning to set up three European direct outlets, starting in Brussels.

Brian Young, formerly with O'Hanlon's UK distributor, Offshore Computing, is setting up the European operation.

Solving team

BOOK publisher McGraw-Hill has teamed up with Software Arts, originator of the TKISolver problem-solving package, to sell its TKISolverPack applications. The packages will be sold by McGraw-Hill through its campus bookshops at colleges and universities across the US. The TKISolver authors were the originators of the famous Visicalc program and took the concept much further with the TKISolver package.

Firms join forces

MOTOROLA and NCR are to join forces in marketing the real time operating system, Versados, for the MC68000 processor. NCR has developed a new kernel for the operating system, which gives it an edge in performance claimed to be 10 times faster than the previous version in real time switching. The new version, VDOS II, will be promoted by both companies as the "standard" real time operating system for the MC68000. Its main applications are in transaction processing, industrial and process control and factory monitoring.

Trade mark

THE NCC has been successful in registering its Filetab and Userlab products as trade marks. The Registry of Trade Marks hearing last week decided in the NCC's favour and will publish a notice in the Trade Marks Journal to give an opportunity for objections. Legal fees, estimated last year at £38,000, were incurred by the NCC in its wrangle with Filetab Support Services over Userlab and associated languages. The suit is not yet settled; and next hearing is scheduled for October 2.

Interface for '80s

DATABASE house Southdata claims to be "dragging CIS-Cobol into the '80s" with an interface to bypass the coding of file handling. The interface cuts out the Index Sequential routines which are part of CIS Cobol. According to Southdata this makes it easy to adapt existing packages to produce screen forms and reports through Superfile.



HEALEY... "I need Unix lookalikes like a hole in the head."

Scots make intelligence deal

SCOTTISH firm Export Software International has concluded a deal with the US developer of IBM's PC-DOS, Microsoft, for a new artificial intelligence system.

The agreement involves the re-writing of its prototype, Expert-Base, into the portable C language to allow it to generate rules which will quantify probabilities. The present version of Expert-Base, which has just gone on general release, is limited to deterministic, yes-or-no responses.

Although Expert-Base seems to have had enthusiastic response in this country for the pre-release code, being the first PC-oriented knowledge-based package, it is gaining international market share which will be crucial to success.

Therefore the link with Microsoft could be an important

step forward for the company in getting that scale of recognition.

A UK user community seems to be well on the way to becoming established for Expert-Base. Fifty big firms are already experimenting with it. And the government procurement agency, the Central Computer and Telecommunications Agency, is poised to adopt it on behalf of the Home Office and the Defence Ministry.

It could also appeal to departments such as Social Security, which is sponsoring academic research into the simplification of official forms for benefit purposes. Products of this kind can reduce the number of questions that need to be put to applicants from a couple of dozen to two or three.

It originated in the Edinburgh University Department of

Professor mauls policies of giants

A SCATHING attack on the software policies of both IBM and AT&T has been made by Professor Martin Healey of Cardiff University.

Speaking at a conference in London on the operating system owned by AT&T, he wondered why IBM had decided to mount Unix on "an inadequate piece of hardware - the PC". He suggested that IBM's strategy was for users to buy it, find it unsatisfactory and return the IBM 3270 terminals. This drew laughter from the audience.

As for Unix on mainframes, Healey said that was "a joke" and would prove far too expensive compared with its use on a supermini. IBM was "genuinely frightened" of AT&T, because it had never before had to compete with a company bigger than itself.

As for AT&T, he claimed it was now "trying to rewrite history". The vice-president of its Western Electric subsidiary had said it had always given Unix full support, but this was untrue, said Healey.

Researchers at Berkeley University would disagree, he added.

"AT&T did not even admit that Unix existed until it realised that it had a weapon to stab IBM in the back with."

He blamed AT&T for the proliferation of versions which had destroyed the objective of a common system. This had led to a wove of imitations.

"As a DP man I need Unix lookalikes like I need a hole in the head," he said.

But he had hopes that new talks between AT&T and Berkeley would lead to a real industry standard with the advent of System VI. "The desire seems to be there now," he said.

Almost as an after-thought, he remarked: "Of course, Unix is not the only multi-user system in the running. Digital Research's Concurrent CP/M is far superior and has the massive commercial pull that it can now run PC-DOS programs."

Healey is professor of microprocessor engineering at Cardiff Uni-

versity and research director of office machine manufacturing Future Technology Systems.

Claire Gooding adds: "Future will be ahead of the times with Concurrent CP/M, which runs on IBM's Personal Computer. It is the first site in the UK to test Concurrent CP/M 3.1 and plans to put it on general release in April.

"There are plenty of others going to implement it, but, as far as I know, we're the only company in the UK," says marketing director David Shear. "Concurrent CP/M 3.1 is a very hard test of hardware in our experience."

The new release of the operating system, announced at Comerford November, brings the IBM PC order PC-DOS into the Concurrent CP/M fold, allowing multiple users to PC-DOS to run on Concurrent.

The system uses the new shop story "windows" technique, which allows the user to switch from task or screen to another in a keystroke.

Pick an IBM-PC link

by Claire Gooding
DISTRIBUTOR of Pick-based machines UCL is gunning for the Fortune 100 companies with a Personal Computer-to-Pick link. The DataLink link allows the PC to share its data with a Datamedia desktop micro running the PC operating system and its related database.

"This isn't a Pick lookalike," stresses Chris Holman, managing director of the UCL subsidiary Universal Computer Systems, which was formed to sell the desktop PC systems.

"What we are offering is a multi-environment operating system."

According to Holman, the Datamedia link will make it possible for the PC to become an executive tool, with the ability to run standalone programs under MS-COS.

The arrival of Pick on the desktop Datamedia has opened up new markets for UCL, which has distributed the Pick-based Universal mini-computers in the UK since 1979.

"What I'm interested in doing is broadening the scope of the systems we sell," says Holman. "The Datamedia enables the PC to be used as a terminal to the Pick system, doing the job it was built to do. That means users have nothing to lose and they gain a lot."

Holman's plans do not stop at the IBM-PC: they include other PC vendors such as Apple, Sirius, and the various IBM lookalikes. He believes the advantages of giving the PC "multi-function ability" will become apparent as the PC takes on a larger role in DP.

"The most important feature is that it will save the duplication of data that goes on at the moment."

The link costs £295 and comes as an optional extra, to the Datamedia 932 hardware, which starts at £13,500 for the basic configuration of CPU, Winchester disc and magnetic tape drives, and Pick OS.

The DataLink link comes on a floppy disc which is loaded on the IBM PC, and effectively emulates the Datamedia Excel Series 30 terminal.

MICRO NEWS

Currys is back to business

by Robert Parry
HIGH street retail chain Currys is taking another shot at selling business micros. Its subsidiary, Currys Micro Systems, is to concentrate only on selling business systems, relegating the home and hobbyist machines it used to carry in its Micro-C shops to the Currys electrical shops.

The six Micro-C outlets - four of which are proper Micro-C shops, two of which are separate units within high street Currys branches - are to get a new image. Training and after-sales support are to be beefed up.

"Our initial strategy was to sell business micros," says Currys Micro Systems marketing manager Andrew Harris, "but then the home hobbyist machines came along. They were technical products, and we used the shelf space in our Micro-C stores to sell them. Business systems we sold through our field salesmen."

Then as the market for home computers mushroomed, and outlets for these machines moved into high street stores, the Micro Systems operation helped the main Currys group set up in-store shops.

"We got 35 going by Christmas 1982," says Harris, "and we were selling in competition with them

from our Micro-C outlets. Early in 1983, it became obvious that this was not our sort of thing at all. We decided then to move out of the home/hobbyist area altogether."

Currys has had an on-off affair with selling micros through Micro-C. The number of outlets has moved up and down, but has fallen short of the projected 20 stores promised for 1982 and 1983.

Its next move will be to move the two remaining Micro-C in-store departments to their own separate premises, and then to increase the numbers. Despite the past record of expansion, Harris sees Micro-C moving ahead.

"Opening stores is not a problem for Currys - it is doing it all the time. What we want is the right formula."

With the Leeds store, which opened up as a separate unit showing the new face of Micro-C last week, he is sure Currys has hit the right note. The way to get customers through the door and buying is to set up the stores as exhibition centres, demonstrating the kit and providing an environment for training businessmen in what micros can do.

"We will aim for specific market segments," says Harris. "There is a feeling out there that microcomputers are a good thing, but people



HARRIS... "Decided to move out of home/hobbyist area."

do not necessarily see how to fit them into their own businesses. You have to communicate with the poor souls who have to use the machines."

Sales of hardware - from IBM, ACT, Apple and Phillips - and software will be backed up by the provision of supplies, maintenance and training.

At first, the training courses will

Thatcher is urged to cut chip import duties

by George Black
THE Prime Minister has been urged to help small high technology businesses by cutting the import duty on chips. She was told that start-up companies are being forced to manufacture abroad because they have to pay 17% on chips where they would pay only 5% on chips in completed machines.

The message was given at a recent reception at 10 Downing Street for the bosses of 30 successful small manufacturing companies. Among them was Colin Sanders, the managing director of Solid State Logic in Oxford, a £12 million enterprise employing 140.

It produces computerised sound recording and electronics switching systems, 90% of which are exported, mainly to Japan.

"Once you have got going in the export business you can get the import duty refunded by the government," says Sanders, "but until then it is very hard going against such duties."

Previous calls from Britain's micro industry to lower the high duties on chips have been well received by Information Technology Minister Ken Baker, and the National Economic Development Council has urged the government

Motorola to offer cheap graphics

by Keith Holder
MOTOROLA aims to give micro makers cheap high resolution graphics with a new chip set under development. Its raster memory system (RMS) will not be in production until early next year, but details have been announced and samples of the two-chip set should be available this year.

"We feel the RMS will revolutionise the market and set a new industry standard for intermediate graphics applications," says Steve Marsh, the company's microcomputer marketing manager.

According to its makers, the system only needs 14 supporting chips to be implemented, and is limited in its sophistication only by the size of the main processor used in the host microcomputer.

Features for the RMS are screen resolutions of 32, 40, 64 or 80 characters per line, and a zoom capability up to x8. The system also creates a virtual screen display, equivalent to 15 times the screen size. This allows the user to select which portion of the display to view, and is said to allow smooth scrolling without the need to continuously change memory.

Horizontal and vertical single pixel resolution scrolling is provided and up to 32 colours may be specified from a choice of 4,096.

There are eight user-defined animation patterns and 16 planes for three dimensional simulations. Up to one MByte of dynamic memory can be accommodated and it will be possible to overlay RMS data onto an existing video or television picture.

Meanwhile, work is progressing on the company's new fabrication facility at East Kilbride. The £20 million plant is structurally complete, and production equipment could be in place by the early summer, says a spokesman.

He denies that there will be any delays caused by shortages of equipment used to manufacture the chips.

Chip makers to get Japanese silicon

by Keith Holder
BRITAIN'S chip manufacturers are to get their own local supplier of silicon wafers - but it will be Japanese Shin-Etsu Handotai to build a £30 million production facility near Edinburgh which will make Shin-Etsu the first major silicon producer to set up in the UK.

Demand for silicon is on the increase, as many of the chip makers are running at full capacity to cope with the high demand for their products, particularly those used in the popular personal computers.

Scotland represents Europe's largest concentration of semiconductor manufacturers, including National Semiconductor, Motorola, NEC and Hughes Microelectronics.

Silicon wafers will be available before the plant is finished as Shin-Etsu has signed an agreement with the Scottish Development Agency to build research and development facilities, and produce around 100 million silicon slices per year by the end of 1984, using temporary

accommodation. A spokesman for Motorola says: "We are happy to see this development, particularly from a known supplier. There will certainly be potential for us to do business."

Construction of the plant is expected to start this year, and it will begin producing silicon next year. Around 80 jobs will be created initially, though this could rise to 600 by 1991.

Shin-Etsu's announcement follows reports of a plan by GEC to set up a similar facility, to support any takeover of Immos, the state-owned chip manufacturer.

At present, all UK manufacturers rely on imported silicon, from companies including Wacker of West Germany, Monsanto in the US and Dynamite Nobel in Italy.

Shio-Etsu also announced that it is teaming up with the US company Dow Corning and its subsidiary, Hemlock Semiconductor, to enhance the latter's polycrystalline silicon manufacture capabilities.

Vector wins \$2.5m order

by Keith Holder
BELGIAN-based hardware and software supplier, Vector International, has won its first major manufacturing order, worth \$2.5 million, to develop and supply circuit boards to Rank Xerox.

The company will develop four types of board for use with the Xerox eight bit and 8/16 bit personal computers. They will add enhanced graphics, IBM 3270 terminal emulation, concurrent eight and 16 bit programme execution and CP/M, plus programming

add-on facilities to the Xerox micros. Mike Ruyssnick, Vector's marketing manager, says that experience gained as European representative for Digital Research's CP/M software has given the company additional expertise to develop software necessary to interface the boards to the existing Xerox hardware.

Ironically, he adds, once the boards have been built, they are destined to be sold exclusively in the US.

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Software File is compiled by George Black

PLATFORM

Who's to police the law on illicit kit?



CAN you imagine arriving at work, finding a large number of British Telecom vans outside, and a heated discussion taking place in reception which you avoid - but when you arrive in your office you find there more managers than you believe existed, all after your blood?

You soon discover that, during the night, your new inter-office electronic mail system, which runs overnight on a microcomputer with an auto-dialling modem, has developed a small fault. Somehow, the wrong number had been repeatedly dialled all through the night and, by a cruel stroke of fate, it just happened to be the local BT manager's home.

By 8.30 that morning, the BT engineers had traced the calls and established that, although your modem was BT approved, your auto-dialling program was not. So by 8.45 all your company's outside lines had been disconnected because of the "illegal use of non-approved apparatus".

You protest that "the program was so simple I couldn't have had a bug" or that "the modem salesman never mentioned the need for auto-dialling system approval". But it falls on deaf ears.

If that makes you uncomfortable, how about this?

You're on your way home and, as you turn into your road, you see a police car and a BT van outside your house. You enter anxiously

There is nobody, apart from British Telecom, to police the law, and that organisation shows little public inclination to do so

and the policeman explains that your non-approved modem, which you had built last week from a kit, had developed a fault which had caused the live mains to be alerted to the telephone line. A BT engineer working on the line had nearly been electrocuted and the supervisor tells you it is unlikely his lads will allow you a telephone ever again. The policeman says you were lucky not to be answering a manslaughter charge.

Does that worry you? It ought not, because even if the modem had not been yours you could still have ended up as the victim.

So how can all this arise? Until recently, it probably couldn't. Most

demands were either a BT monopoly or were tightly controlled. Installation was complex and equipment connected to the modem had to be approved. What is more, it was all very expensive.

Now everything has changed. Modems are freely available, installation is only a matter of "plug in and go", and they can be connected to anything with an RS232 interface. And costs are low.

There are still laws and regulations - many tougher than before - which have to be complied with before equipment can be used on the BT network. These regulations are particularly important where they apply to modems which are mains-powered. Mains electricity has to be kept away from the telephone line. And users themselves must be protected from the telephone line which is now regarded as potentially hazardous.

Even the safety of the new style sockets is open to question now.

The result of all this is that the cost of compliant equipment increases - in design, in manufacture, and in obtaining approval.

Most suppliers conform to the rules but, as it is legal to sell non-approved equipment, many others do not with the extra advantage of being able to sell at a lower price. This can be motivated for financial reasons, but happens just as often because the complex rules are neither known nor understood.

The situation would be better if greater publicity was given to the regulations, potential hazards and penalties. Users of non-approved equipment should be fined and disconnected. But the problem is that there is nobody, apart from British Telecom, to police the law and that organisation shows little public inclination to do so.

PROFILE

Fairbairn - vociferous critic who runs the NCC

WORKING for Guinness was curious training for the director of the National Computing Centre. The stout maker has had a stable product line for a couple of hundred years. The products that the computer director has to monitor are lucky to live a couple of years.

But David Fairbairn, dividing his energies between offices in London and Manchester and between industry and government, has little time to reflect on such ironies. He now knows the M1 as well as anyone in the country,

by George Black

keeps a flat in Manchester as well as his home in the South, and philosophically resigns himself to having no weekday evenings of his own.

Fairbairn is a militant Wet, committed to interventionism and a vociferous critic of modern-day Conservative policies. He is one of those relentless proposers and scheme-hatchers whose letters evoke a sigh of dismay from the senior civil servants - though he concedes "they might often like to try my ideas but don't have the authority to do so".

One of his latest brainwaves is that programmers could be moved from one company to another for a transfer fee, like footballers. It may sound far-fetched, but he thinks it could be one way of overcoming the current chronic shortage of skilled manpower.

Government and industry would collaborate to train programming and systems analysis staff, and would then put a price on the head of the trainee - maybe £1,000 after one year, £2,000 after two years and so on. Thus the private firm could get back its investment in training and the buyer could claw back some of its payment if it was a training organisation.

The notion is still in its infancy, but if he finds a lot of support Fairbairn will be causing more head-shaking in the corridors of power at 1 Victoria Street.

Lack of training is one of his favourite hobby-horses. He blames the country's biggest computer users such as GEC for having adopted a negative and short-sighted policy towards training for the industry, as well as towards research and development.

In the final analysis, whatever the regulations, the network belongs to British Telecom. If BT allows illegal practices and equipment to become widespread, why should honest suppliers continue to conform?

John Waddell
John Waddell works for a leading communications company.

PUZZLER

10 YEARS AGO

FROM COMPUTER WEEKLY OF FEBRUARY 28, 1974: In the week of a General Election the Press Association installed its own Digilog installation, two 4K Micro 16s, to process the results.

IBM users throughout the UK received letters warning of price increases of up to 10% within six months. The Hoskys Group reported annual turnover of £2.2 million, a 38% increase.



FAIRBAIRN... "Automation is the only hope of reviving British industry."

"The trouble is that we have been insisting on a three-to-five year payback on their money, which is not a realistic approach to the computer industry," he says. "They have to think of the state of the industry and of the market in 10 years' time."

Few British firms did any staff training for the industry and fewer still did more than provide for their own barest needs. Far too many relied on poaching new graduates from the big systems houses like CAP. Shortages were therefore bound to worsen.

Already some of the industry majors, such as Ferranti, were saying it was staff problems rather than cash problems which were inhibiting their growth rate.

Fairbairn, one of the UK's foremost Japan-watchers, contrasted the British approach with that of Japan. "The Japanese have fewer software companies than we do - 1,200 against our 3,000 - but their big firms have a very high proportion of staff working in software. Fujitsu has 15,000 software engineers and NEC and Hitachi maybe 10,000 each. And they have progressed beyond our distinction between

analyst and programmer."

In his view, Japan has exceptionally good communications between industry and government compared to Britain. They have specialist civil servants who grow up with an industry and are not shifted every two or three years. And one should not be deceived by the modest expenditure figures put out by the Japanese industry department (MITI).

"In 1981 we discovered they were coming to the end of a seven-year project on software tools that had had between £70 million and £80 million pumped into it. And that was just the beginning, before the fifth generation effort got under way."

The Japanese had developed close links between academic life and the market and were a step ahead of us in this respect. The British university computing syllabus was in danger of becoming out of date and encouraged "esoteric system building" rather than problem-solving.

One result was that some computer graduates could not find jobs in spite of the skills shortfall.

"The Japanese are bidding very high because they have identified computers as the key to the 21st century."

"There is still time for us to get it right. Our industry is at the stage that cars were in 1914." The Japanese plan to launch their software invasion in 1984, he says. They have been concentrating on developing applications of a very high quality which will not show their hand until they are absolutely ready. They will come in as they have in other industries with a policy of undercutting by 15%.

They will maintain this whatever the response until they have dominated the field - then prices will fall.

Fairbairn is not sure that the British government has yet appreciated the central role computer power will play in the industrial struggles of the future despite the constant endeavour of Information Technology Minister Kenneth Baker.

"And yet only a few years ago the government was not even convinced we had any need of an indigenous computer industry. It only resisted ICL because Sperry had been allowed to buy ICL might have been shut down and all the public sector applications would have been in danger."

analyst and programmer."

In his view, Japan has exceptionally good communications between industry and government compared to Britain. They have specialist civil servants who grow up with an industry and are not shifted every two or three years. And one should not be deceived by the modest expenditure figures put out by the Japanese industry department (MITI).

"In 1981 we discovered they were coming to the end of a seven-year project on software tools that had had between £70 million and £80 million pumped into it. And that was just the beginning, before the fifth generation effort got under way."

The Japanese had developed close links between academic life and the market and were a step ahead of us in this respect. The British university computing syllabus was in danger of becoming out of date and encouraged "esoteric system building" rather than problem-solving.

One result was that some computer graduates could not find jobs in spite of the skills shortfall.

"The Japanese are bidding very high because they have identified computers as the key to the 21st century."

"There is still time for us to get it right. Our industry is at the stage that cars were in 1914." The Japanese plan to launch their software invasion in 1984, he says. They have been concentrating on developing applications of a very high quality which will not show their hand until they are absolutely ready. They will come in as they have in other industries with a policy of undercutting by 15%.

They will maintain this whatever the response until they have dominated the field - then prices will fall.

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ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, March 1, 1984

Esprit is money well spent

THE European IT programme Esprit is now underway after months of nail-biting and cliff-hanging while the German and UK governments have used it as a pawn in obtaining agricultural budget reform.

And about time too. It is reprehensible that such a far-sighted if relatively poorly funded effort to set the European IT industry on its feet was ever used in this way - let alone for so long. Luckily the impetus of the programme, which has been building up since 1980, has not been deflated, although it has come dangerously close to that.

We applaud the aims of Esprit and the efforts of Viscount Davignon to get it off the ground. The programme seeks to ensure that Europe marches in step into the next computer generation with common underlying technology. That can only be to the good. If it works it will benefit the appalling technological balance of payments deficit, and boost jobs in the long term.

Of course, there will be problems. A true European common market comparable to that of the internal markets in Japan and the US can only come about when barriers such as currency and language have been transcended.

Cynics say that such a common market will never come about due to the "Balkanisation" of Europe with its entrenched national attitudes. Maybe, but if working on the Esprit programme can encourage young R & D staff to collaborate, these attitudes will begin to break down.

Then when they get into top positions the process of change can only accelerate.

Compared with IBM's annual R & D budget of over £1.5 billion, the European Commission's half share of the Esprit programme, £400 million over five years, is paltry. But compared with our own national Alvey initiative it is at least new money rather than a reshuffling of existing resources.

Davignon, who started the ball rolling, is a strong contender to become the next President of the European Commission. Let us hope that a combination of Davignon and Esprit will also help create a better attitude of awareness for IT in Westminster.

Be constructive, Apex

A NEW report published this week and claiming to highlight the "unacceptable face" of new technology says that 50 office jobs disappear for every one that is created by new technology.

The survey, carried out by Apex, the Association of Professional, Executive, Clerical and Computer Staff, covers the Midlands area, defined as stretching from the Welsh border to the North Sea. Questionnaires were sent to all Apex senior staff representatives in the Midlands, where there are a total of about 25,000 members.

Trade unions are concerned that the new technologies are used to create wealth rather than just eliminate jobs. We agree with that principle.

We do not, however, have much sympathy for so-called statistically based surveys claiming that 50 jobs are lost for every one created.

Rather than the unacceptable face of technology, that kind of claim is the unacceptable face of statistics. It is well known that employment in the Midlands has suffered terribly over the past few years. Apex's survey, however, seems to use a finger in the wind approach so as to cast the blame to fit its arguments.

Last year, Len Wells, president of the Association of Scientific, Technical and Managerial Staffs, hit out at the way trade unions are associated with negative attitudes towards the development of the British economy. His remarks came at a time when his union was issuing a report on how the UK can best stimulate research and development in the engineering industry. At the time, we praised ASTMS for taking a constructive approach.

Apex's recent report is not so constructive. A study into the effects of new technology needs a much more thorough approach than that taken by Apex.

1984 and all that...

THIS week's example of the strange things people say about computers was sent in anonymously, with a request that the ES go to Oxfam.

The other controversial issue is whether the International Monetary Fund should allocate more Special Drawing Rights (SDRs) to members. SDRs are simply microdots on the IMF computer which can be swapped for currency.

LETTERS

Protection Bill fears

IN reply to Charles Christian's item on data protection (*Computer Weekly*, February 9), I would dispute that the forthcoming legislation is likely to cause any considerable increase in the cares of a DP manager.

The National Computing Centre recently completed a project for the European Commission which involved a considerable number of interviews with data users in countries where legislation is already in force. In no case did we find any substantial cost or worry had been engendered and most computer users regarded data protection as just a matter of course.

The actual registration will have to be done, but judging by the present Bill, this will not be a complex operation. The number of requests by data subjects for information is very low in European countries (1% of the subjects is a liberal figure).

These aspects are not likely to cause any violent upsurge in staff requirements.

There is no argument about whether a fee charged is "excessive". The maximum will be specified by the Minister. There is no dispute either over what is a "reasonable" time to reply. It is laid down in the Bill as 40 days.

Good security is vital to any DP department. Far from regarding additional security as a "burden", I believe that DP managers would welcome it. Any reasonable safeguards introduced to prevent misuse of personal information will bring the advantage of also deterring misuse of data sensitive to the installation.

The fears expressed about the present Bill stem from the difficulties placed in the way of the registrar and of the data subject rather than any hardship placed on the computer user.

R. A. ELBRA
Senior Consultant, Security and Privacy Division
National Computer Centre
Manchester.

Views on the OTC market growth

I READ with interest Dave Madden's article on Blesadde Computer's forthcoming OTC flotation, and the ensuing account of the UK OTC market (*Computer Weekly*, February 9).

As former consultant to Harvard Securities for five years, we have been intimately involved with the development of this market, and it may interest your readers to know that the origins of that connection go back to my review of the Anglo-German Foundation's 1977 Report, *Financing of NTBF's (New Technology-Based Firms) in the UK and FRG*, published in *Computer Weekly* of March 31 1977 in an article entitled "Time for City to back new technology" (a somewhat undiminished in its importance today).

The project with Harvard later became known as "OTC for NTBF's" between us. This company itself was started and specifically formed as a management and financial consultancy in information technology, to develop and promote, among other things the provision of OTC-related finance for young technology-based companies, as covered in a further item, "Castell's new venture offshoot scheme to assist young growth companies" (*Computer Weekly*, November 9 1978).

With or without the Business Expansion Scheme, I believe that the most important effect of the new dramatic growth of the OTC market will be to teaching small businesses (but nevertheless fully public) environment how to become big businesses; how to use quoted paper to grow by acquisition; how to promote themselves and Great Britain Ltd internationally; and how to lobby and influence the politico/economic

Copyright law and software

I READ with interest the articles and comments on the legal action brought by Lotus Development Corporation (*Computer Weekly*, February 16) for alleged software piracy in the US. However, I was dismayed to read your suggestion that software is not already protected by copyright law in this country. Few, if any, legal commentators would share this view.

The Whitford Report on UK copyright law published in 1977 states quite explicitly: "We feel that existing categories of (copyright) protection are sufficiently wide to cover programs already. The Green Paper on

copyright law reform published in 1981 shares this view. This is not to say that copyright law reforms along the lines recently introduced in the US are not necessary or desirable, both to clarify certain borderline areas and to remove any conceivable arguments that software is not already covered by copyright law.

Under existing UK law, all software pirates are liable to pay damages in full to recompense the loss of the copyright owner from unauthorised copying of software, and that under section 21 of the copyright act 1956 a software pirate may commit a criminal offence and be liable to a maximum penalty of £2,000 for each instance of piracy.

It is only by educating users that the unauthorised copying of software is both legally and morally wrong that the investment in the software industry in this country can be properly protected. The role of newspapers like your own is extremely important in accurately bringing the current state of UK copyright law to the attention of users generally.

ROGER TUCKETT
Senior Commercial Lawyer
DEC
Reading.

Computing and the post - a final comment

A FURTHER comment may be of interest in relation to the last paragraph of the letter from M. L. Vietra (*Computer Weekly*, February 23).

The seven formats quoted have, I believe, been reduced to six, since the early XXX 9XX (eg in Norwich) has been replaced by new codes of format XX9 9XX or XX99 9XX.

The second part (9XX) of all the formats is constant. The six different first parts were considered necessary to preserve the established city district numbers, sub-divided where necessary (eg Liverpool L19, London W1M and London WC1R) and to provide for the large (but sparsely populated) rural areas (eg PA85 covering the Isle of Harris).

Most other countries have only four (eg Norway) or five digit postcodes (eg France), but these operate at a much higher level, nearer to our residential/sector level. Canada is the only country, as far as I am aware, that has a coding system of a similar level to Great Britain and in that case no previous coding (eg in cities) was

taken into account. But there is more consistency in format (eg NTT 7M1).

IVOR J. SMITH
Northwich
Cheshire.

Another solution

THERE is another solution to Puzzler (*Computer Weekly*, February 9): one die has the faces: space, 1, 2, 3, 4, 5; the other has three ones and three sevens. The faces showing the sevens would certainly be unusual.

JOHN DEXTER
Hythe
Hampshire SO4 5GR.

The Editor welcomes letters commenting on subjects published in *Computer Weekly*, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

NCR not the only centurion

NCR IS to be congratulated on its centenary but, in its claim to be "the only computer company that can count to one hundred" it may not be strictly accurate and is certainly being less than generous to erstwhile friends and partners. Elliott Brothers (London) Ltd, later Elliott-Automation Ltd,

"The Brothers" started making scientific instruments in 1800 and later made parts for Babbage. It could therefore have made a similar claim when the National Cash Register Company was a mere strapping 16.

Elliott has long since been swallowed up in the GEC empire, but the name lives on in EASAMS. You may say that this is not relevant because EASAMS are only initials, but so also are NCR. EASAMS will celebrate its bi-centenary in the year 2000. I hope that the brains there will use the next 16 years to think of a really appropriate retort.

ERIC HUGGINS
Stoke Poges
Bucks.

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North Yorkshire ROOM TO GROW

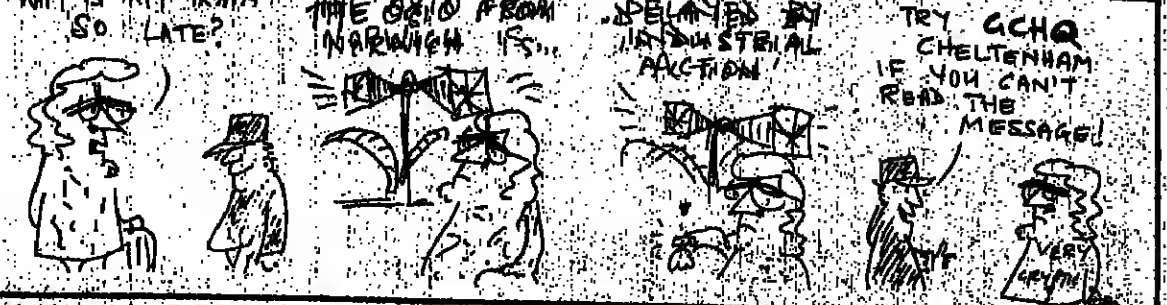
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File

by
Don



Reservation

BRITISH TELECOM has pounced upon an American network protocol from Micromin and aims to make it the standard for file transfers between micros.

The glossy brochure carries a smidgeon of small print: "We reserve the right to provide products which do not accord exactly with the descriptions and illustrations appearing in this leaflet."

It goes on to gush: "With adoption of the protocol, it is likely to become a de facto standard."

Without adoption, it will not, of

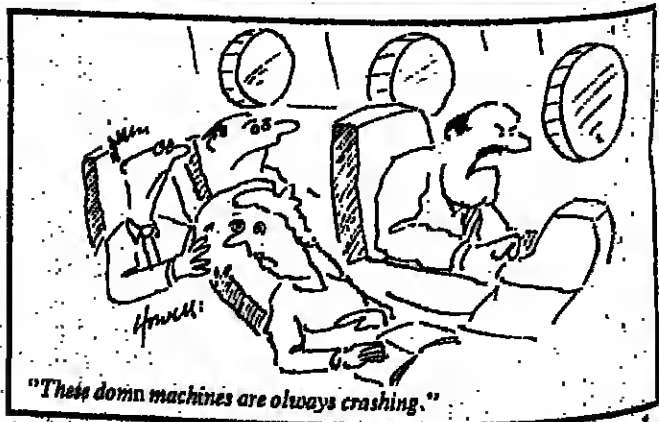
On the boards

WHAT would be the most unexpected piece of casting in the theatre? Larry Grayson as Joan Collins as Lady Macbeth? John Gielgud as Walter Gielgud?

How about a play starring a ZX11? My Scottish theatre correspondent, Trevor McNunn, knows me of a strange production scheduled for mid-March at the Traverse Theatre Club in Edinburgh. Entitled "ZX 11", the play "stars" ZX11 with

McGrath.

Sounds fun. Be there if you can.





Ben Salama who is to head the Information Services Division of Sphinx, has been working with Unix for the last eight years. After four-and-a-half years at the computer systems laboratory at Queen Mary College, London, the first Unix site in this country, he joined Bell Laboratories as a full-time consultant, and before joining Sphinx, he worked for ICL as an independent consultant responsible for the implementation of Unix on the ICL Perq.

Digital Research has appointed Andy Wightman as OEM systems manager (Europe). He joins from Transdata.

Raymond Wright (above) has been appointed general manager of National Advanced Systems UK. Before joining NAS he was managing director of United Financial Services, a subsidiary of United Leasing, one of Europe's largest computer leasing companies. He has also worked for DEC (Europe) and IBM (UK).

Datasc of Altrincham, Cheshire, has appointed Stuart Allison as senior sales executive to cover the South. He has experience in sales and engineering with Sperry, Scottish Daily Record, Centronica and most recently with Cable and Wireless.

Manager, systems technology at Marconi Instruments is now Geoff Blyth. This role has been created following Marconi Instruments' acquisition of Quest CAE, Farnborough. Blyth was formerly a product manager for Marconi Instruments' ATE Division.

Ashton-Tate has appointed Ricky Leah, formerly account manager (Southern region), as UK sales manager. Before joining Ashton-Tate in March 1983 he had five years' experience in sales.



John Ford (above) is now project manager with the professional sales division of LA Computer Services. He was previously computer sales executive with Racal-Decca Management Services.



John Morris (left) has been appointed a director of PBO Computer Services from his previous position as head of its bureau division. He retains direct responsibility for the company's bureau operations. John Adey (right) has joined PBO Computer Services as a marketing executive for its business systems division with responsibility for the Midlands and North of England.

CONFERENCES

Pergamon Infotech announces two state-of-the-art tutorials in London during March. The Software Process from March 14-16 will be an examination of the current fragmented approach to software engineering. It is priced at £460 + Vat.

From Mar 19-21 Dr Carl Meyer will make a rare visit to the UK to present Meyer on Cryptography.

1984

ARTIFICIAL INTELLIGENCE WEEKEND

at the City University, London (7th & 8th April 1984)

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an examination of cryptographic techniques in practice. This is also priced at £460 + Vat. Further information from Pergamon Infotech on Maidenhead 39101.

Five new BIS Applied Systems courses are included in the company's 1984 information training brochure. Office Automation Management Overview is a one-day course on March 13, June 1, September 5 and December 10, costing £135 plus Vat. Developing Distributed Systems, a two-day course on April 5-6, July 9-10, and October 11-12, costs £285 plus Vat and is for managers and senior DP staff. Communications in the Eighties is a two-day course costing £285 and will be on April 9-10, July 23, October 10-11. Developing Online Applications, a five-day residential workshop, costs £590 plus Vat and is for analysts, senior programmers and project managers involved in implementing or evaluating real time systems. The dates are March 12-16, April 30-May 4, June 18-22, August 6-10, September 24-28, Nov 12-16. Getting to Know Your Micro in a two-day course costing £275 plus Vat. It will be held on April 30-May 1 (directors and senior management only), June 19-20, August 16-17, October 18-19 and December 6-7. Further information from Cherry Blomore on 01-633 0866.

How close to the PC must you get to make money?

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PEOPLE

John Lowe has been promoted to sales director of Computer Peripherals (Systems) exclusive UK distributor for the Telex Corporation's range of IBM 3270 compatible terminals. Chris Dolve, former sales and marketing director of Computer Peripherals (Systems) becomes group operations director of Computer Peripherals Ltd. Lowe was formerly national sales manager for Computer Peripherals (Systems) which he joined from Nexos where he was national sales manager and was formerly marketing manager with IBM.

Diell Electronics has formed a customer service department and John Duckenfield (below) who headed the company's engineering repair facility, is promoted to customer service supervisor.



Motorola Information Systems, the newly-formed Motorola company providing data processing and communications products, has appointed John Milway as sales manager, Southern region. From September 1982 until he joined Motorola's UK subsidiary, he worked out of Dallas, Texas, as acting national sales manager for domestic US and then as national accounts sales manager.

Michael Belas has joined Aim's professional division as sales manager (Southern), and assumes overall responsibility for sales development of the Aim Charter range of professional software and systems for the legal profession in Southern England and Wales. Prior to joining Aim he was product manager (legal systems) with Star Computers and was previously with Butterworth and Oyez Computers.

Rair has appointed Rager Chalke as European marketing manager to set up exclusive country distributorships throughout Europe for the Rair Business Computer. He joins from Dynabyte where he was European marketing manager. His previous experience includes seven years with Hewlett-Packard, for four years selling systems in the City to banks, insurance companies and commodity brokers.

Romtek has reorganised its European operation and has appointed key personnel in the UK and Netherlands offices. Peter Still (left) is promoted from managing director of the UK subsidiary to managing director, European operations. Joining the UK office are Len Griffiths (centre) as European distributor sales manager and Steve Scorse (right) as UK sales manager. Expon-

sion of the UK office includes on extensive VLSI demonstration facility. The UK office now handles sales and marketing for UK and European headquarters for administration and Benelux sales and the Dutch office has been promoted as Dutch-based administrator of European operations.



Euryll Ag Gwilym (left) and Reza Dowlatabadi (right) have been appointed sales directors by Geisco, the UK operation of General Electric. Ag Gwilym has responsibility for Geisco's markets in banking and finance, energy and construction, manufacturing and operations in Ireland. He joins from Philips Data Systems where he held management responsibilities for computer systems and videotex businesses. Dowlatabadi is responsible for sales of international business systems to UK industrial companies. Previously he was with Geisco's European headquarters and before joining Geisco in 1979, with IBM France.

David Gayler, computer services manager in the management services division of W H Smith, based in Swindon, is appointed to the newly-created post of technical services manager of W H Smith Cable Services. He joined W H Smith in 1974 as computer operations manager, later becoming computer manager, then computer services manager.



William Olle, an expert in the planning and design of computerised information systems using database technology, is appointed in a part-time advisory role as an associate with Spicer and Pegler Associates management consultancy, while continuing to pursue his own consultancy practice. Dr Olle published a book on Codesyl databases in 1978.

Versatec has appointed Bob Dobbins as director of international operations based at the headquarters in Santa Clara, California. He will be responsible for all Versatec international operations including subsidiary companies in the UK, West Germany, France and the Benelux. Jan Geuse, Versatec's first director of international operations, has been appointed director of international market development. Both moves reflect Versatec's heavy emphasis on worldwide expansion in CAD/CAM markets.

Barry Towers has joined Redifusion Computers as a Teleputer salesman. Previously he worked at Office International as a DP/WP salesman and prior to that, 1980-82, he was a salesman with Gestetner. Syd Hobbs joins Redifusion Computers as a senior analyst consultant for international marketing, based in Moscow. For the past three-and-a-half years, he has worked as a consultant with Euroco Computer Services.

Computer Technology Ltd has appointed David Wilson as project manager in its public sales department. He was previously a senior consultant with Scicon.

Ken Hardy has been appointed distribution divisional manager by Microvitec. He joins from NCR where he rose to area systems manager.

Jim Timmons has joined Computer Automation's Commercial Systems Division as area sales manager to head the Scottish sales operation. He will be based at the newly opened Scottish office in Airdrie, Lanarkshire. Timmons spent ten years with Olivetti as a sales manager in the UK and Scotland. He also worked for CMC Microdata for four years as sales manager for West Scotland, and prior to joining Computer Automation was with Philips Business Systems, again as a sales manager.

Roy Foster has joined Delta Data Systems at Welwyn Garden City as systems support manager. He was previously at Geisco in Kingston as a product support manager.

Adrian Moss has joined Peachtree Software International as support consultant. He is part of the UK team responsible for quality assurance standards. He was previously project systems analyst at Burroughs Machines.



Tom Askwith (above) has joined Thorn EMI Micrologic as manufacturing director. Previously, he was at STC, most recently as projects manager with STC Components at Harlow, Essex.

Martin Wells has joined Sension Scientific, Northwich, as sales and marketing manager responsible for the company's range of data communication, data acquisition and control equipment. His previous career was in technical liaison and sales with the Water Research Centre, John Cant Scientific and Centronic Sales.

Esab-Lincoln Automation, a Stevenage-based robot arc welding equipment manufacturer has appointed two new area sales managers bringing its UK total to six. Alan Collett will be responsible for the Midlands area and David Bradford, based in Manchester, will service the North. He has previously worked in technical sales and marketing of capital welding equipment.

DIARY

MARCH 5-9

Peachtree Basic Accounting Systems Course, Peachtree training centre, Maldenhead. £115 per day plus Vat. Further details from Richard Moore, on 0628-23711.

6160 Operating Computer course. Training School, Cannock, Staffs. £315 plus Vat. Further details from course administrator on Cannock 2511.

MARCH 5-7

Controlling Software Project. Keith London Associates' three-day seminar. £450 plus Vat. Further details from Pat Cox on 07073-30114.

MARCH 5-8

Basic Under VSPC. Compover course. Training School, Cannock, Staffs. £210 plus Vat. Further details from course administrator, on Cannock 2511.

MARCH 6

Fourth Reading Spring School on Expert Systems. BCS Reading. BCS members £10, non-members £25. Contact Alan Staines, 89 St Marks Road, Henley-on-Thames. Software for Expert Systems. BCS Expert Systems Group. Gustave Tuck Room, University College London. 6.30.

System Generators and Productivity. BCS London North-West. 11. Grindley. Monksdene Hotel, Harrow. 7.45 for 8.00.

MARCH 6-8

VS APL Fundamentals. Cocking and Drury three-day course. 16 Berkeley Street, London W1.

£300 plus Vat. Further details from Alice Ingle on 01-493 6172.

MARCH 7

ITBC New Work Trust. BSC Bristol. C. Brett. St Vincent Rocks, Hotel, Bristol. 7.15.

New Antics System. Computer Displays Group. Alan Kuchling. BCS headquarters, London. 6.00. Contact R. A. Barnshaw on 0532-431751, ext 7466109. Note change of date.

Mighty Micro, Magic or Madness. BSC Humberide. David Firnberg, BCS president. Grange Park Hotel, Wilmsley. 7.30.

Realism in Computer-Generated Images. BCS Displays Group. BCS headquarters, London. 2.00. Contact R. A. Barnshaw on 0532-431751, ext 7462/6109. Note change of date.

IT in the High Street. BCS Kingston. Alan Jacobs, Salesbury. Conference Room 1, Kingston Polytechnic. 7.15 for 7.30.

Electronic Funds Transfer. BCS Sussex. F. J. Hooper, Barclays Bank. Worthing College of Technology, Goring-by-Sea. 7.15 for 7.30.

Wordplex. BCS Merseyside. G. Lennox. Faculty of Science Lecture Theatre, Liverpool University. 6.00 for 6.30.

MARCH 8

Text Analysis with Databases. BCS South Essex. David Baker. West Cliff Hotel, Westcliff-on-Sea. 7.45.



Manufacturing Data Systems International (MDSI) of Ann Arbor, Michigan, has established a European headquarters in Frankfurt-Main, West Germany, and former managing director of MDSI Deutschland Juergens Selig (above) has been appointed manager, Europe. A co-founder of MDSI Deutschland in 1975, Selig assumed responsibility in 1980 for German-speaking areas and in 1982 for Scandinavia. He has also provided the management for Applicon's Central European region since its takeover by Schlumberger in 1982.

Alex Williamsen has been appointed field engineering manager for Scan-Optics. He has spent seven years with Ragen International, providing hardware and software technical support on Scan-Optics equipment.



Duke Ebenezer (above) has been appointed director of the Data Products Division of Thorn EMI Datatech, from engineering manager. Based in Wells, Somerset, Dr Ebenezer will be responsible for all R & D activities, major OEM contracts and the planned expansion of the division. He joined the company in 1978 as development manager for data products, after spending five years with Burroughs in the UK. He hails from Sri Lanka.

Cellular radio makes an explosive impact on the 80s

Enthusiasts already envisage wrist phones for the masses and portable pocket telephones, says Bohdan Szuprowicz

CELLULAR radio services, the first of which went on the air in Chicago last year, are seen as one of the fastest growing and most lucrative businesses in communications, and are expected to develop into a multi-billion dollar industry before the end of the decade.

Enthusiasts already envisage wrist phones for the masses and portable pocket telephones, but more astute industry analysts see it primarily as a business service. Monthly subscription costs are in the order of \$150 and although these may come down to about \$70 in a few years it will be hard to beat the ubiquitous pay telephone even if it costs 25 cents for a local connection.

Cellular radio technology is primarily designed to provide many more simultaneous conversations for mobile telephones than the 23 New York City, for example, the conventional mobile telephone service handles about 700 subscribers who already experience considerable delays. Introduction of cellular radio could increase this to 100,000, eliminating delays and offering more reliable service and clearer reception.

The key to cellular radio technology is the central computerised automatic switching system within a metropolitan or rural area in which the service operates. The total area is divided into cells each of which contains a base station transmitting only to radio telephones within its boundaries.

As you move from one cell to another your conversation is automatically switched to the next base station by the central switching system. This allows many more

Within the next two years cellular radio services will be available in most of the 30 largest metropolitan areas of the US

calls to be handled within the area which, theoretically, could always be subdivided into more smaller cells providing almost unlimited capacity for the system.

1984 is the first full year of cellular radio service in the US and industry estimates put the initial number of subscribers at about 15,000 in the first year increasing by 500% to 90,000 in 1985.

Initial revenues from cellular radio service are not expected to exceed \$30 million but are projected to rocket by over 480% during the year.

This growth will slow down later but will average about 86% a year during the 1980s. Link Resources forecasts 1,360,000 subscribers by 1990 and yearly revenues from cellular radio services of over \$1.1 billion, but other projections expect even more explosive growth to about 2,000,000 subscribers generating \$3.6 billion in revenues.

Still other studies suggest 3,000,000 subscribers by 1990 paying a total of \$6 billion for the services, and by the year 2000 the revenues of the overall cellular telephone industry are estimated to exceed \$30 billion.

Such a huge potential market attracted dozens of communications carriers originally headed by AT&T racing to secure operating licences from the Federal Communications Commission and about 20 hardware manufacturers supplying the equipment needed to operate cellular radio systems.

Sales of switches, control stations, and mobile telephones are expected to boom in 1984 at about \$800 million but will peak at over \$1 billion in 1986 when the bulk of initial installations will be in place. Within the next two years cellular radio services will be available in most of the 30 largest metropolitan areas and most other areas of the US are expected to have the service before the end of the decade. But, despite this rapid growth and potential steady revenues the cellular radio industry presents relatively limited investment opportunities and did not attract as much venture capital as some of the other high technology areas.

This is because cellular radio is basically a highly regulated industry, initial equipment costs are relatively high, and there are still many uncertainties about the profitability of such enterprises.

Perhaps the best investment is in the shorter term for the cellular radio equipment manufacturing firms which supply the specialised equipment to get the industry on its feet. American Cellular Network, Cellular Technology and examples of small businesses, but the bulk of revenues will most likely come from the coffers of big established communications manufacturers and the Japanese.



Mobile telephone systems offer ease of operation and worldwide connectivity via the public telephone network.

EDUCATION

Graduates in information technology are now in the making at about 20 UK polytechnics... John Kavanagh reports

A degree of respectability for computing

THIS time last year John Sherwood was running a computer centre; now he is senior lecturer on BSc and MSc degree courses in information technology at Leicester Polytechnic. For suddenly information technology has become eminently respectable in higher education circles.

Last October about 20 polytechnics, with full backing from the government, introduced information technology degree courses alongside their more traditional computing science and electrical and electronic engineering courses.

The idea of these new degrees came up in 1982 - designated Information Technology Year by the government. Some 25% of the funding went to just one of the 20 or so polytechnics: Leicester. This was because it already had over 80 staff in relevant disciplines such as computing and engineering, strong links with industry and some extremely advanced research work going on.

It is one of the UK's leading centres of research into communication between humans and machines, both in the office and

machine interfaces and so on.

There has been no problem finding companies to take on the 40 MSc students for the four months they spend on an industry project as part of their course.

Students have come from all disciplines to join the courses. Undergraduates must have a physical science subject at A-level or the equivalent. MSc students can come from any background, although they must prove they can absorb technological ideas.

Only four of the 40 MSc students are women in this first year of the course. "It's very disappointing. There's no reason why women should not be just as successful as men."

The courses are run jointly by the schools of electronic and electrical engineering, mathematics and computing. Undergraduates study software engineering, database and data handling, microcomputing, man-machine interfaces, communication and networking, including the integration of voice and data communication, plus information technology applications.

MSc students cover broadly the

This network has not been thrown together, with cable and sticky tape everywhere

the factory. On the microelectronics side it has a high reputation in voice input, image processing and factory plant control.

Sherwood is one of a dozen new staff taken on to run the courses. They include people from industry with no teaching background. In addition some teaching is done by existing staff in related disciplines.

Sherwood describes the eventual graduates as information technologists. "They will have an overview of what is going on in an organisation and will advise their management on the broader aspects of computing," he says.

"Usually these are separate and the people involved in each one don't talk to each other. But the convergence of computing and communications means there are tremendous opportunities just waiting to be seized by management, to the overall benefit of the organisation."

There is no threat to computing science people or engineers. "Specialists are very important," Sherwood says. "We need the computing scientists and the electronics engineers to design the computers. They have in-depth knowledge of specific areas."

"The information technologist has a broad knowledge of computing without going into such nitty-gritty detail, plus an understanding of how the company or organisation works."

"For example, there is a strong software element in the course, but we stress the idea of software engineering. Our students learn how to produce robust systems which are properly designed and constructed and which have proper documentation so they can be maintained by other people."

"They learn a lot more than how to program in a particular language; they have to appreciate the environment in which it will be used and look beyond the programming department to the wider needs of the organisation; man-

same areas, plus project skills and hardware. The emphasis is very much on computing and communications: MSc students spend three hours a week on each of hardware, communications and software engineering, plus two hours each on database and man-machine interfaces.

Much of the course time is spent using equipment. There are synchronous and asynchronous terminals and a wide range of microcomputers all around the school of electronic and electrical engineering, linked by an Ethernet-type local area network.

Two Case DCX data switches have been installed. They interface the local area network to a variety of other devices, including a videodata terminal and a telephone channel simulator for demonstrating telephone traffic. The DCXs stand next to each other, but are linked by a wide area network so one of them can simulate a remote site.

Plans include linking in a Digital Equipment PDP-11/60 minicomputer, which is used for image processing, plus a new PDP-11/23.

This network has not been thrown together, with cable and sticky tape everywhere. "It's tempting to do it all on the cheap," says Sherwood. "But our students are going out into industry when they leave here. We've set them a good example by creating a well-engineered physical environment, with proper cabling, trunking, furniture and so on."

The first MSc graduates in information technology will come on the jobs market this year. BSc people will start appearing in the mid-1980s. They are expected to find jobs initially as programmers, database administrators, network supervisors and hardware technicians.

Some are specialist jobs, but Sherwood says that because of the graduates' broad knowledge they

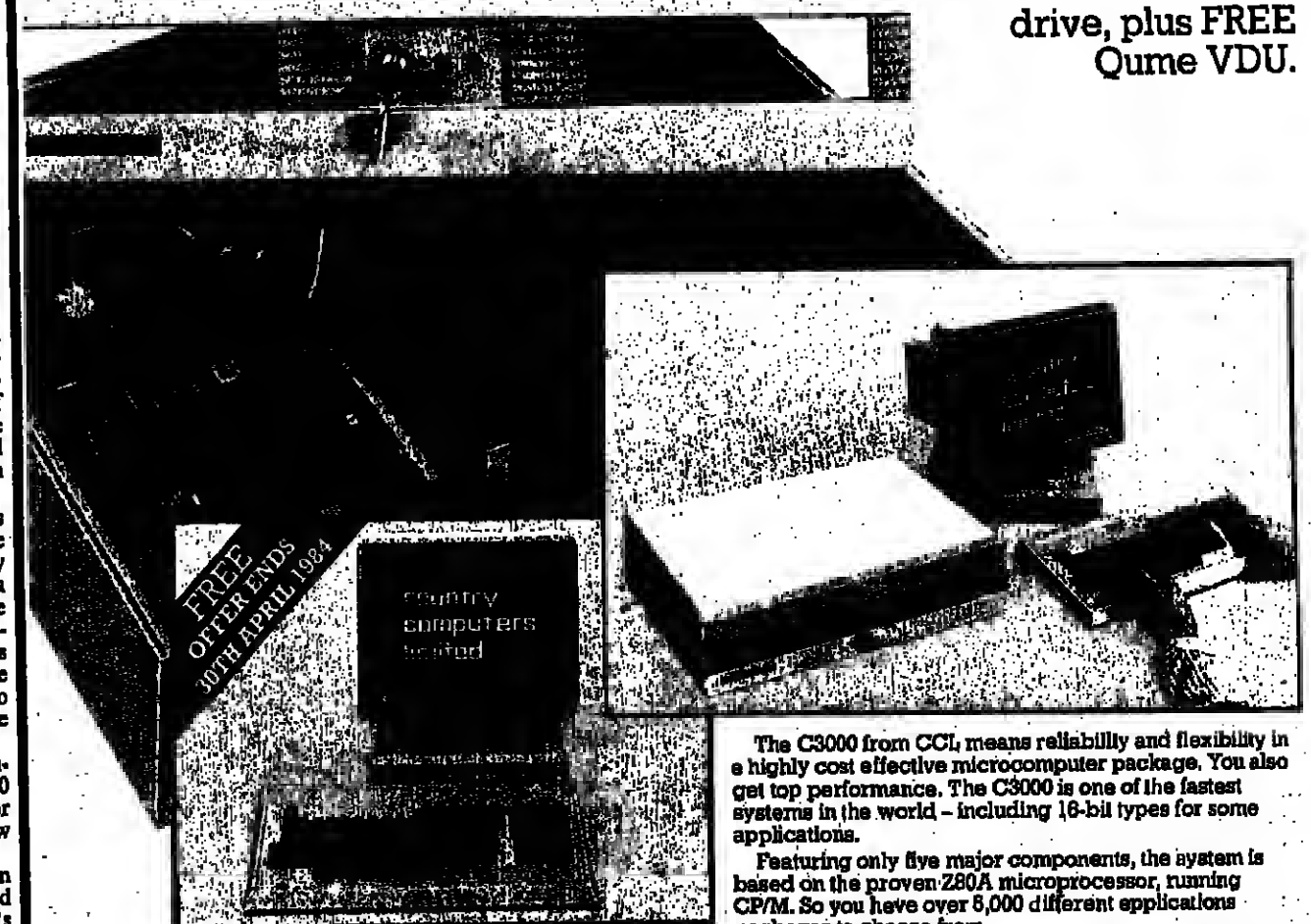
will have far greater potential for taking on more general roles in information technology.

This takes him back again to the emphasis on the practical. "People who promote information technology often have a vision of a more prosperous and interesting future for society, with homes and businesses linked by networks carrying sound, image and data traffic," he says. "We want our graduates to have vision - but we also want them to have jobs."

SHERWOOD... "We want our graduates to have vision - but jobs as well."

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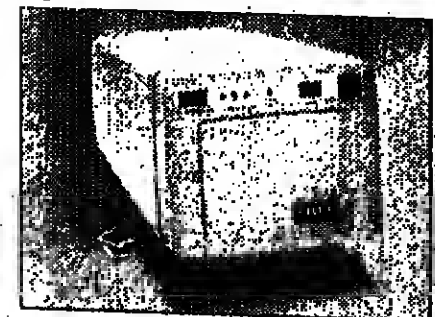
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SECURITY

Computer swindles are costing British industry up to £2.5 billion a year . . . Peter Smith looks at prevention

How to win this costly war against electronic fraudsters

THE need for communications security has been with us in one form or another for a very long time. In the Middle Ages, a messenger would commonly bring with him a token known to be the property of the sender in order to confirm the authenticity of the message. Codes and ciphers have been used since the earliest times to make the contents of a message unintelligible to any but the intended recipient.

The invention of the electric telegraph in the last century brought a new dimension to this problem. Now any engineer could tap the line and read and record the data transmitted on it with comparative ease and, given reasonable care, in complete safety and without fear of detection.

The possibilities for unauthorised access to and interference with electrically transmitted information have increased with every advance in telecommunications and computer technology. Now online systems with dispersed multiple terminals are common. It is in the banking field, which is already heavily dependent on electronic funds transfer, that the risks are most evident. The building societies, commodity dealers and similar operations will be similarly vulnerable as new technology is introduced.

In Britain, few such organisations currently employ stringent information security techniques as a matter of routine although the Midland Bank and Barclays Bank are understood to be experimenting with the American Data Encryption Standard (DES) technique.

The technology of the 80s may make the "office in the home" a reality. Unfortunately, it offers similar opportunities to those bent on electronic espionage and fraud. There are two sides to the problem. One is the risk that information which has a high value can be obtained by enemies or competitors — often without the knowledge of the owner. This is particularly relevant in government and defence and, in the commercial world where, for example, proprietary information relating to new technical developments, or plans for financial deals is involved.

In designing a system from scratch, security should be considered from the outset, with the software selected, the cables run, and the terminals located in such a way as to minimise the risks

The other risk, that of intrusion, is that information or data may be illegally inserted into a system in such a way as to mislead and influence the actions of a recipient or, in the case of a computer, to instigate a transaction of advantage to the perpetrator.

It is difficult to obtain hard facts concerning the incidence of computer fraud because the victims usually, and understandably, are at pains to avoid publicity for fear of losing customer confidence.

However, a recent *Daily Telegraph* report estimated that British industry is losing "anything between £500 million and £2.5 billion a year" in this way.

So what can be done to prevent



A messenger at NatWest Bank: still the most secure method of communication.

these abuses of modern technology and at what cost? As in many fields of endeavour, it is dangerous to generalise but, since no one would welcome publication of the specific security measures used to protect their information, there is no alternative. Readers should have little difficulty in relating the generalisations to their own situations.

In any engineering problem, it is necessary to define the user requirements and in the case of security this means assessing the threat. The old adage "you get what you pay for" holds good in most specialist fields, and information security is no exception.

There is little point in installing a system which would defeat the KGB in a situation where the real threat is that posed by an avowed technician armed with a home computer.

On the other hand, one should not dismiss too lightly what might be achieved by well-organised technical criminals using readily available, if expensive, equipment of considerable sophistication.

Threat assessment is not an exact science, and system users may feel uncomfortable about discussing the subject. It is, however, the only foundation on which a cost-effective information security system can be built. The alternative is to assume that anyone attempting to break the system will have access to the most advanced technology available. This approach of expecting the worst is rightly adopted in government circles at very considerable expense. In the commercial world, it is usually necessary to relate the costs of information security to real reductions in the cost of indemnity insurance or to estimated reductions in losses through fraud.

Having assessed the magnitude of the threat, the next step is to identify the points of weakness in the system.

these weaknesses? Clearly, in designing a system from scratch, security should be considered from the outset, with the software selected, the cables run and the terminals located in such a way as to minimise all the risks mentioned.

In the case of an existing installation, it is rarely possible either to replace everything and start again, or to remove the system from service for a significant period.

There are, however, a number of techniques which can be employed at moderate cost, to reduce very significantly the vulnerability of a system to either information loss or intrusion.

The most obvious way of preventing either intrusion or information loss by a wire tap lies in the use of encryption techniques. Much has been published on this subject in recent years, and systems managers might be forgiven for concluding, depending upon which technical journals they read, either that simple software algorithms can provide an acceptable level of protection, or conversely that no commercially available data encryptions are fully secure.

In reality, the adequacy of an encryption technique in a given situation depends upon the resources assumed to be available to those attempting to break the system in terms of both cryptanalytical expertise and computational power. If we accept the existence of the former, then the encryption algorithm must be such that its solution is computationally not feasible using the assumed resources, and within a timeframe determined by the nature of the information to be protected and the key period.

Thus, a relatively trivial technique could be quite acceptable to protect information of ephemeral value where the key is changed daily. Such a situation might exist in the case of a system controlling the movements of a fleet of security vans.

On the other hand, where the information is of long-term value (eg annually changing cash card



personal identification numbers or government and commercial secrets) or it is not feasible to change the key frequently (eg in the case of a world-wide network), much more powerful algorithms must be employed.

The only theoretically unbreakable encryption system is that known as the "one-time pad". In binary form, such a system may be implemented by arranging to use a message "bit" by bit, random stream of bits. A receiving end, a copy of the same random key stream must be held; modulo two addition of the key stream to the cipher stream.

As long as the stream is truly random, at least as long as the message is never reused, the system is theoretically unbreakable. The main weakness in the

system lies in the need to control and distribute the key in a secure manner.

The term one-time pad arises from a popular, manual implementation in which pads of keys are held by users and each page is used once only.

Clearly, such a system would be very difficult to employ where large amounts of data are to be transmitted. Practical data encryptions therefore generally rely on complex hardware software algorithms to generate permutations and substitutions of data bits in an order determined by a periodically changed key (typically of up to a few hundred bits).

This algorithm either operates directly on blocks of data (block cipher) or generates a long pseudo random key stream which is module two added to the message stream (stream cipher).

A direct attack on such a cipher, assuming that the algorithm is known, requires that a key stream is generated for every possible version of the periodically changed key. These key streams are then matched against the cipher stream, using every possible starting point, until the original message stream is identified.

Communications circuits are best protected by the use of fibre optics to replace conventional copper circuits

It is worth noting that the development of a computer-based test for unencrypted data is itself a non-trivial problem. Weaknesses in cipher design or in the method of use may, however, lead to other ways of breaking the system.

The most commonly-used implementation is the stream cipher because the system can be designed in such a way that a single bit error in the cipher stream causes only a single bit error in the deciphered data.

The security depends on the pseudo random sequence, the design of which is a complex problem, and on the length and life of the key. These factors determine the computational power and memory size required to break the cipher in a given time by the direct approach.

To take an extreme example, it has been estimated by the National Physical Laboratory that if the solution requires the existence of 10^{10} memory elements, the physical memory would occupy a space 10km high over the whole of the earth's surface.

If the principle concern is with the prevention of intrusion rather than information loss — and this may well be so in the case of a bank — authentication techniques can be very effective in providing the required protection.

The principle here is that whenever an attempt is made to access the system, an interactive authentication routine is initiated to confirm that the terminal in use is a member of the system (ie not an intruder) and, if necessary, that the user of the terminal is entitled to access. Authentication may take place at the start, the end or at intervals during a transaction.

Simple authentication systems may be implemented within the software both at the main computer centre and within the terminal. This approach, however, suffers from a number of disadvantages. It is necessary to verify the in-

tegrity of the software, next, including the main computer operating system.

Such a solution is difficult to implement once a system is operational, particularly if a number of different types of terminal are in use.

It is not possible to use standard terminals.

A preferable, high-integrity approach is to use authenticating modules at the terminal location with a separate authenticating controller interposed between incoming lines and the main computer system.

At the terminal location, modules can be made tamper proof and they can, if necessary, be installed within a secure cage. At the main computer location, an authenticating controller can, if necessary, be installed on a by-line basis so that the installation of authentication on an existing system can be achieved without major disruption.

Because neither the authentication modules nor the controller rely on the main computer operating system, the problems of installation of complex software packages do not arise. Such systems require the use of encryption algorithms.

A well-designed authentication system is often the best way of improving security on an existing system where intrusion is regarded as the main threat.

Protection of a complex system against the radiation of signal bearing information is both expensive and difficult to achieve. It is possible to deal at moderate cost with those parts of the system.

These are CRT-based terminals, printers, and data circuits. In the case of terminals and printers, special versions are available with RF shielded housings.

Communications circuits are best protected by the use of fibre optics to replace conventional copper circuits. Fibre optic multiplexers, modems and drivers are now readily available, including RF shielded versions.

Another significant advantage of fibre optics is that the circuits are almost impossible to tap.

There is little point in installing a system which would defeat the KGB where the real threat is that posed by an avaricious technician armed with a home computer

The high bandwidth characteristics of fibre optics, and the maturity of the technology, now make it a preferable alternative to copper for many applications on grounds of price and performance alone, leaving aside the security issue.

The advantages of modern-day communications are many. But there is no doubt that they put many organisations at risk, often without their knowledge.

Providing total security on such systems, particularly when originally designed with security in mind, may be extremely difficult and expensive. In most cases, however, it is possible to provide very significant improvements in security integrity without disruption of the system operation, and at costs which are trivial compared with the losses which could otherwise be incurred.

Peter Smith is marketing director of Systems Production.

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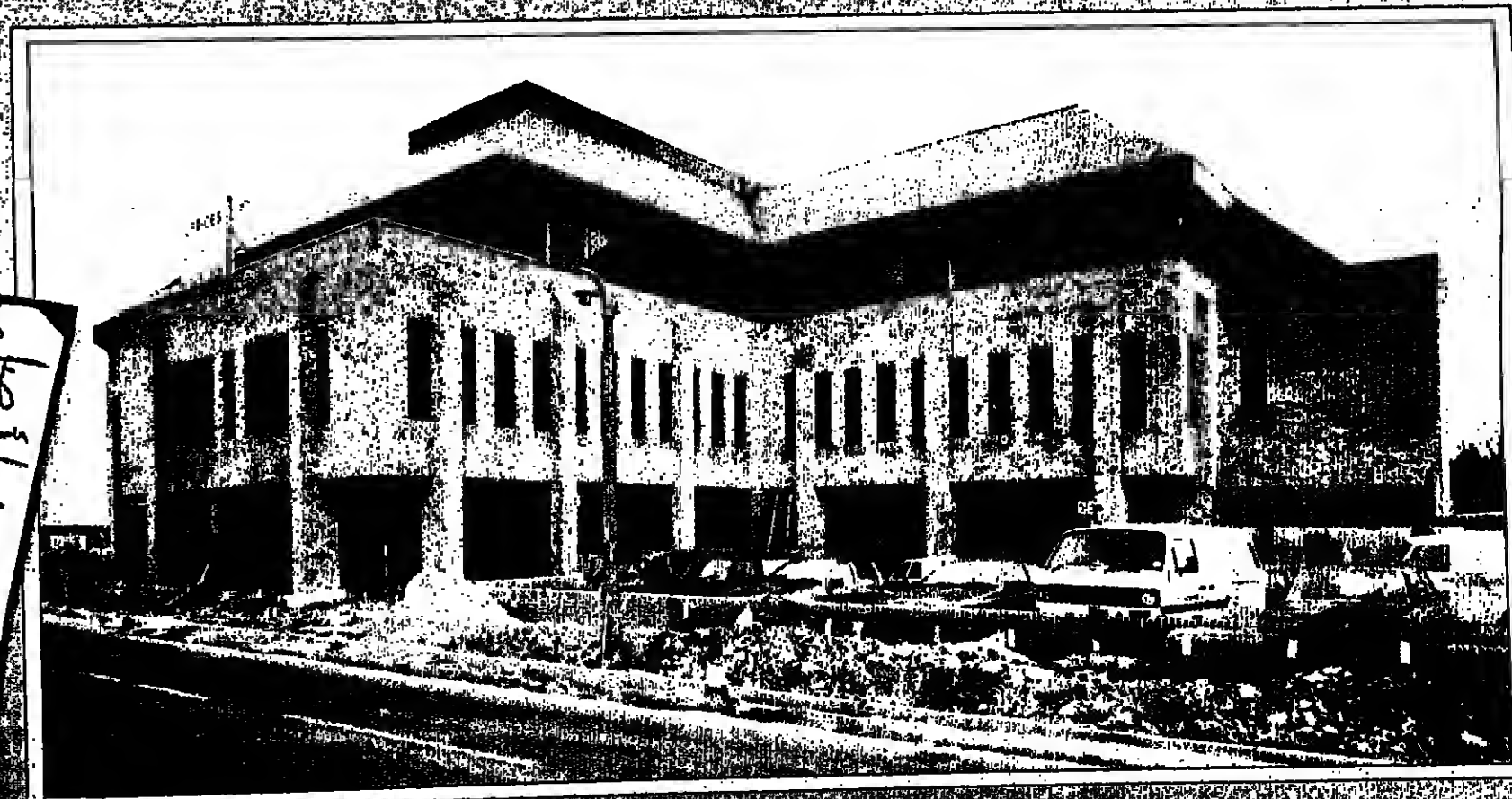
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Let's get mailboxes moving

NCC's Paul Wilson says that its recent study on mailbox systems recommends immediate action

MAILBOX systems will have a dramatic impact on productivity and effectiveness and should therefore be implemented by UK organisations as quickly as possible. This is one of the conclusions of a recently completed study of mailbox systems jointly funded by the government's Electronics and Aeronautics Requirements Board (EARB) and the National Computing Centre (NCC).

This and a number of other conclusions are presented as a series of "recommendations for the effective deployment of mailbox systems in the UK" in an appendix of a new NCC publication *Introducing the Electronic Mailbox*.

Mailbox systems work by providing the individual with a personal mailbox through which messages can be prepared, sent, received and filed. Incoming messages are deposited and held in the mailbox until they are accessed at a time and place of the recipient's choosing.

The potential impact of mailbox systems on productivity was identified after investigating some of the most advanced user organisations. It is clear that when a mailbox system has permeated throughout an organisation, a new corporate culture starts to emerge.

This is characterised by less concern with processes and more concern with getting things done; delegation becomes more common and employees are more flexible and responsive; the demarcation lines within the hierarchy are broken down.

The net result of this changed corporate philosophy is more effective team working; better decisions based on more relevant up-to-date information; improved customer service and faster product development.

A survey of 34 mailbox products currently on the UK market was conducted in the course of the NCC study, and identified that most contemporary mailbox systems are designed to facilitate informal, unstructured communication such as that undertaken on the telephone. This kind of use

can benefit the individual by saving time, reducing interruptions and improving communications.

However, such benefits are intangible, difficult to measure and do not make a direct impact on an organisation's profitability. Alternatively mailbox communication can be structured so that specific tasks can be undertaken.

The study identified 13 different types of applications for structured mailbox systems including the control of branches, transaction processing, education and training, project teams and working parties, the running of meetings and communications between customers and suppliers.

Such experience that has been gained of structures to date, has indicated that there are many possibilities (the NCC study identified over 100 generic types) and that specific applications in particular organisations will probably require their own tailored structures. Hence there is a need for mailbox software which can be easily modified to incorporate new structures as the need arises. Workers in the field testify that this is not possible today and lay the blame on the lack of an appropriate programming language.

The product survey conducted in the study asks suppliers to estimate the number of mailbox users of their products. The results showed that there are about 105,000 users of these 34 products worldwide and that this figure is growing rapidly. However, when estimating total worldwide mailbox usage, it must be remembered that the survey did not cover two other, probably larger, components of mailbox usage.

These are:

■ Mailbox products not sold in the UK (and probably used mainly in the US);

■ Mailbox systems which have been developed internally by organisations for their own use.

Paul Wilson is senior consultant of the Office Systems Division at the National Computing Centre.

Organisations and systems taking part in the international dissemination of mailbox recommendations on 11 January 1984

Organisation	System	No. users reached
Istel	Connet	400
Zynar	Zynar/Nestor network	120
Plessey	Internal Plessey system	150
Datapoint	Datapoint Electronic Mail Service	200
Texas Instruments	Texas Instruments Inc. MSG System	1,000
Mailnet	Mailnet	150
Computer Sciences	CSC Notice	1,000
Geisco	Geisco's Quik-Com System	200
Milepost Business Systems	British Telecom NE internal systems	50
	Janet	300
	Arpanet	300
ICL	ICL internal systems	500
Bell Northern Research	Bell Northern Research Cocos	4,500
GMD	Komex from GMD (West Germany)	300
Rank Xerox	Xerox Interim	5,000
DEC	STSC APL plus SIG Icebox	200
	Digital internal (all-in-one)	100
NPL	Usenet	5,000
	NPL Scrapbook & Edit Systems	150
Hewlett-Packard	HP's internal HP Desk Manager network	2,000
New Jersey Institute of Technology	EIES at NJIT	200
I. P. Sharp Associates	I. P. Sharp Associates	7,000
	Mailbox	31,000
Prestel	Prestel Mailbox	2,000
Stockholm University Computing Centre - Q2	COM	20
NCC	NCC's Zynar network	40
	Blend	62,750

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NATURAL LANGUAGE

During his visit to the UK last week Jon Barwise spoke to Philip Hunter about his research into natural language

Professor who brings the language of logic to life

PROFESSOR Jon Barwise of Stanford University, who has been given a \$21 million grant to develop a fundamental theory of natural and computer language, was in the UK last week to discuss his research.

After giving a talk at Imperial College, he tactfully sidestepped a suggestion that he had questions about the logical basis of Prolog, a language now being used for development of artificial intelligence software. And it would have been rude for Barwise to have been more forthright about Prolog, since his host was Bob Kowalski, one of Prolog's pioneers.

To set the scene, Prolog is a so-called logic language ideal for describing relationships between data and events, and thought by many to be ideal as a root language for artificial intelligence applications. Japan has singled the language out as a base for its fifth generation computer software.

Barwise is not at present directly concerned with Prolog or any other computer language, but is working on something much more fundamental: an attempt to develop a general theory of information and meaning, covering both natural and computer languages. The results could have great significance for future computer languages, machine translation of natural languages, computer speech recognition, and expert systems.

Although still at an early stage, the importance of Barwise's work is well recognised in the US, and last November he was given the \$21 million grant to expand his team, and co-ordinate US research on understanding the basis of meaning and information as

conveyed in computer and natural language.

This grant, from an independent US trust, is only to develop the fundamental theory according to Barwise and more money could follow to build practical applications.

Fundamental to Barwise's work is the belief that first-order logic is not enough to describe real life situations. First order logic is the use of simple logical connections like *and*, *or*, *not*, *implies*, all of which are wellknown to computer scientists.

The problem with first order logic is that it attempts to isolate a sentence without taking account of who spoke it and where it was spoken

According to the theory of first order logic, anything that cannot be defined using these is outside the domain of logic altogether.

First order logic is based on the mathematical theory of sets, which consist of objects classified by some simple relationship - sex differentiation for example. The language Prolog is built up around this idea, and is often called a first order logic language.

Given Barwise's criticism of first order logic, it is not unreasonable to assume that he might turn up his nose at Prolog. But not in front of Kowalski.

Instead he says: "I do have qualms about built-in semantics of

first order logic."

Barwise has qualms about the present application of logic to understanding how information and meaning are conveyed in natural language, and by implication he criticises present computer applications in speech recognition, natural language translation and expert systems.

"What we need is something that accounts for the whole picture," says Barwise.

The problem with first order logic, Barwise argues, is that it attempts to isolate a sentence without taking account of who spoke it and where it was spoken.

Sentences have to be related to the real world, before the full meaning can be extracted.

Some linguists distinguish between the meaning of individual sentences in isolation, and the information that can be inferred when the sentence is related to external factors such as whether the speaker of it is an inveterate liar.

But Barwise thinks meaning and information are closely related and cannot be considered as separate entities. Instead he refines meaning into two types: a universal meaning, and a meaning that is specific to the particular situation.

For example the statement: "It is two o'clock" has a universal meaning. It can either be two in the morning, or two in the afternoon. But if it is dark at the time, it can be inferred that it is two in the morning, unless you happen to be standing close to the North or South Pole. In this case, the statement would, according to Barwise, have the situation specific meaning that it is two in the

morning.

This idea, when developed further, could be important for computer understanding of natural language. There would be two stages to the analysis: building up a picture of the universal meaning of the words, then relating this to existing knowledge of the situation to infer what was actually meant on this occasion.

Computers are light years away from being able to do this for general written or spoken languages, but there is no reason why they cannot do this in situations where the possibilities are limited, by a set of rules for example.

One example, taken from Barwise's paper *The Situation in Logic*, is the card game bridge. The game is for four players, in competing teams of two, and involves rounds of bidding to exchange information about cards in each hand.

One of the rules of the game is that each pair must tell its opponents the meaning of any un-natural bid. One such bid is "five clubs", which some people call when they have either four aces, or no aces, in their hand.

The partner of the person making this bid will usually be able to deduce the meaning of the bid from the cards held in his/her own hand, so the bid then has a meaning specific to the situation, according to Barwise's convention.

However the rules of the game only require the more general meaning to be explained to the opponents.

Such reasoning is by no means beyond the wit of computers, because the language involved, and the number of possibilities are limited. It is also easy to define the relationship between the utterances, or language used, and the situation, which is the card game of bridge.

Before computers can understand human speech, they must not only be able to extract meaning from sequences of individual words, but be able to identify the words themselves from the sound.

The same Barwisean principles could be applied to this process. Human speech, whether in Latin or Chinese, can be broken down into individual components, known to linguists as phonemes, which are independent of individual words. The problem for computers is that while each word can be regarded as being made up of several phonemes, in speech words run into each other, and therefore the phonemes can be distorted or lost altogether, making it hard to understand what is being said without additional knowledge of the situation.

At present, computer speech recognition systems work by matching spoken words with stored versions of the words. Mismatches are common, except where the vocabulary is limited to less than 100 words. And they can work only when trained to a single speaker - when the stored version

BARWISE... "I do have qualms about built-in semantics of first order logic."

of the words are obtained by recording the person who is to use the system.

According to Barwise theory, trying to identify the words simply by pattern matching is a mistake because it is based just on first order logic, and ignores knowledge about the way words are combined in speech.

Individual words, like sentences, sometimes need to be related to the surrounding context for ambiguity to be resolved.

Returning to the problem of understanding the meaning of sen-

tences of the words are obtained by recording the person who is to use the system.

People in conversations aware of these relations and so to infer the meaning of what is said, even when the words themselves leave some ambiguity.

The utterance "This food is hot" does not always refer to temperature, and if the speaker is referring to an Indian curry, it probably means the food has a lot of chilli in it. The relationship here is between two meanings of the word "is" and the food being eaten.

Barwise explains: "Systems constraints between types of situations are what allow one situation to contain information about another situation."

He aims to develop a "situation theory", which he describes as an enrichment of mathematical theory. Already he has the notion of this theory, which is: *Every real situation S determines a set of facts (FS).*

If (S1) = (S2) then S1 = S2.

More axioms will follow to enable the relationship between different situations to be related to the facts about them. It will remain in apply the theory to understanding of natural language.

This could also be applied to the compilation and interpretation of high level computer languages, and applications generators. Barwise plans to address the problem of inference, the process of extracting meaning from language.

This could be important for future development of expert systems. In the case of an expert system, inference is the process of making logical deductions about a particular case from an established base of knowledge in some expert field. The expert field might be medicine, the particular case the symptoms of pneumonia, and the knowledge base would be relationships between symptoms and diseases.

Maybe not all the symptoms are present in the particular case, but constraints between the sets of symptoms pertaining to each disease will often enable a diagnosis to be completed.

Barwise plans to study the more general relations between constraints that enable inferences to be made in language. He writes: "A genuine explanation of logic must examine the constraints in the context of all the other constraints that enable cognitive agents (people or computers) to pick up information from their environment and to serve as links in the informational chains, transmitting information from one to another."

"Turning this view into a genuine mathematical theory is an exciting but enormous challenge."

But this is what Barwise plans to do with support from leading US linguists, mathematicians and computer scientists.

Situations and Attitudes by Jon Barwise and John Perry, published by Massachusetts Institute of Technology Press, is reviewed on page 31.

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PROJECT MANAGEMENT

In these articles, the bases of successful projects are examined

Build foundations

SOME say the most important objective of a project manager is to get a salary increase and/or get promoted. The chances of obtaining either of these is enhanced if his project is successfully concluded on schedule and within allowed costs.

To order to do this, the project manager must be able to control what is happening on the project. Before he can exercise any control, however, he must have monitored the progress of the project against a plan. In other words, the plan is the yardstick against which progress can be measured, so enabling the manager to take any corrective or controlling action that is necessary.

Developing the plan therefore forms one of the most basic and important parts of the project manager's role. To use a building metaphor, it is the foundation upon which the success of the project is built.

Having seen the importance of the plan to the success of the project, it is important that it is not set

in concrete too soon, as it is also linked with the design process and may change as the project develops. These changes usually occur during the earlier phases of the project, particularly during the feasibility study phase.

In the feasibility study phase, many design alternatives may exist. For example a system may be implemented using specially written software, an applications package or, perish the thought, by manual procedures. For each of these alternatives there is a corresponding plan - at least in outline form. The costs and timescale of these plans are in turn factors in deciding which alternative to adopt.

Of course, once the basic design has been decided, any change of plan is viewed with a healthy degree of suspicion as the easiest way to complete a project on time is to change the schedule!

In order to build up a plan, one does, of course, need estimates of the resources likely to be required. The most important resource in a

computer project is usually development manpower, but other factors can also be critical - for example computing power available for development or implementation resources.

In the very early stages of a project - say, during the initial feasibility study - estimates are usually based on experience. Cynics may say that this is a polite way of saying the estimate is merely a guess based on gut feel.

However, so long as the experience on which it is based is relevant, this approach may be the only one that is practicable.

As knowledge of the project increases, so more detailed estimates will be developed. An important reason for estimating is to be able to monitor progress later, so the basis for estimating should be straightforward enough to allow this to be readily done. This means that the estimate must be based on some easily seen measure of progress - for example the number of lines of code written and tested. Once estimates of resources

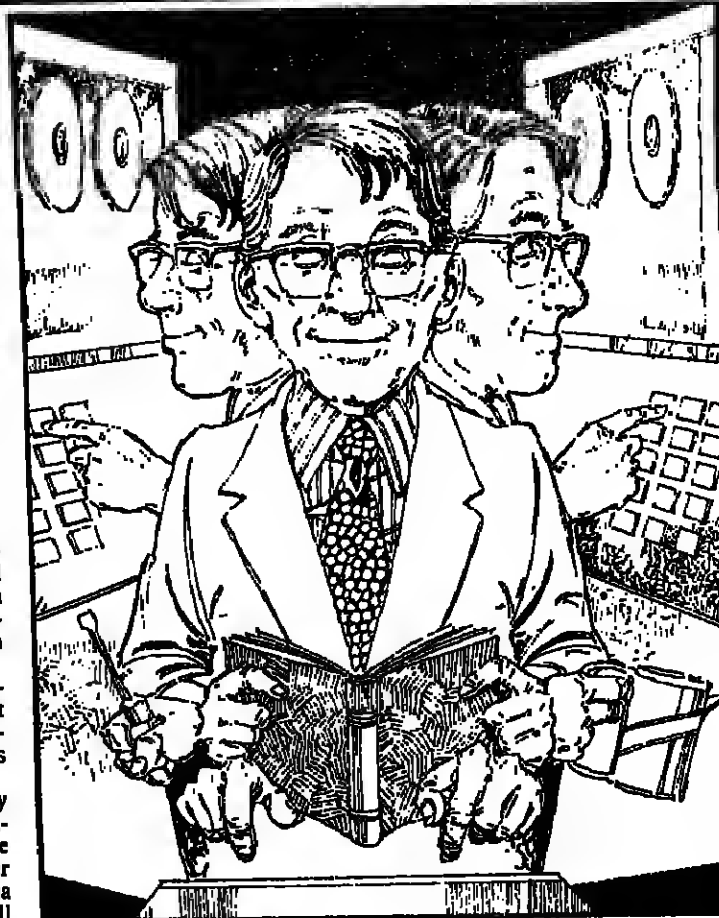
needed - manpower, computing facilities and so on - are made, a plan can be produced. This plan, of course, has to cater for external constraints, such as current staff levels and cash flow.

There is a great temptation to accept the first plan that comes to light: this is a mistake. Remember, the plan is the foundation of the project and, within reason, time spent on this is rarely wasted.

As the project progresses, knowledge of the project increases and events occur (or do not occur when they should) which make it necessary to change the plan. Such changes should be questioned.

In this context, a useful safeguard is to keep a copy of the first plan readily available. When compared with the updated plan, this highlights creeping slippage.

A good project plan, realistically updated in the light of project experience and outside events, is the only yardstick a project manager can use to monitor progress. It is also the basis on which he will report progress to his boss.



The project manager must be able to control what is happening.

Why best is the enemy of good

I FIRST came across the phrase, "the best is the enemy of the good", in a book on the design of real time systems. The author's point was that in a complex system, striving for the best design can take a very long time indeed. If the best design can ever be defined at all, in his view, it is better to take a design which is good and get on with the job of implementing it, rather than waste time chasing the elusive "best" design.

At first sight, "the best is the enemy of the good", can be seen as an excuse to stop trying and an answer to the lazy man's prayer. This is most definitely not the point.

The accent is very much on the word "good". It is up to the project manager to ensure that his

searching for the best design or for the best hardware takes time. This not only costs money directly in terms of staff salaries, but also costs money indirectly in terms of delayed benefits or delayed savings from the completed project.

Sometimes the temptation to investigate for longer than is necessary is because this is easier and more pleasant than making decisions. Suppliers often think they discern this trait among their clients.

They also cynically note that a lengthy investigation is invariably followed by the expectation that delivery and implementation will be carried out in record time so that the completion date does not pass by. In practice this expectation is rarely achieved.

The important point in optimising design or selection is to keep in mind the relative costs and benefits of what is being done. For example, a procedure that is only used once a week is unlikely to need to be optimised as carefully as one that is used many times a day.

The well-known 80/20 rule usually applies. This says that 80% of the benefits are obtained for 20% of the effort; while the remaining 20% of the benefits require the remaining 80% of the effort.

Another example of misguided staff effort is in trying to minimise the amount of memory a system takes. This may have been very important 10 years ago when memory was relatively expensive. Now there is more likely to be an emphasis on response times, security and ease of maintenance rather than minimising memory usage.

As with all parts of a project, the design and selection processes must be planned and monitored. Because of the research aspect of much of this, it is very easy for this phase to grow and get out of hand. It is one of the most difficult tasks of the project manager to provide balanced control, so that this work is not skimped but is done well and within the time allowed.

In the phrase, "the best is the enemy of the good", the implication is that the search for the technical best, I hope I have conveyed the impression that the project manager needs to have a broader view than this. For him the best system is not only technically good, but is also produced on time and within the cost allowed.

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TUESDAY, MARCH 13TH

RETAILING

- 8.30 COFFEE AND REGISTRATION
- 9.15 Mass Retailing of Business Micros — Michael Milman, managing director, Greens Business Systems (a subsidiary of Debenhams Ltd.)
- 9.55 How dealers should present themselves — Chuck Hansen, managing director, Computerland.
- 10.35 COFFEE
- 10.55 What Apple expects from their dealers; what Apple gives their dealers in return — Keith Hall, sales and marketing director, Apple Computers (UK).
- 11.55 Retailing through education and training — G. Summers, managing director, Planning Consultancy Ltd.
- 12.25 LUNCH

MARKETING TO THE PROFESSIONAL AND CORPORATE MARKET

- 2.00 Choosing Your Products — Jack Schofield, editor, Practical Computing.
- 2.40 Market products and sales channels — key considerations in the building of the dealer programme — John Crawford, vice president, world wide dealer programmes, Data General Corporation.
- 3.20 Personal computer dealer marketing in 1984 — Nigel Hensell-Thomas, personal computer dealer manager, IBM Ltd.
- 3.45 DEC's approach to the marketplace — Mike Harding, marketing specialist, Digital Equipment.
- 4.10 How to approach the corporate customer — Hal Hovland, joint managing director, Hovland Business Systems.
- 4.50 CLOSE

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WEDNESDAY, MARCH 14TH

SOFTWARE

- 8.30 COFFEE AND REGISTRATION
- 9.15 Vertical market software — coverage of vertical markets by specific packages varies greatly — some sectors are over-supplied and there are many open opportunities — Russ Nathan, managing director, Romtec.
- 9.55 Procurement — How you evaluate software from various sources — David Turley, director information systems division, Tamsys.
- 10.05 COFFEE
- 10.55 Marketing Software — The Business Market — Barry Neil, sales manager, Micro Computer Products International Ltd.
- The Games Market — Nick Alexander, managing director, Virgin Games.
- 11.35 Systems and applications software developments — David Fraser, general manager, Microsoft Ltd.
- 12.15 LUNCH — Guest speaker — John McNulty, McNulty's Interchange.

SYSTEMS INTEGRATORS AND OEMs

- 2.00 Communication is the key to office automation — Malcolm Reip, OEM marketing manager, Computer and Systems Engineering PLC.
- 2.40 Discs and Peripherals — Bob Britten, sales and operations manager, Kennedy International Inc.
- 3.20 Printer products and the markets — Alan Clemmetsen, consultant, Mannesmann Tally.
- 4.00 Market trends in VDUs and VDU terminals — Harvey Ulljohn, managing director, Lear Siegler Data Products Ltd.
- 4.40 CLOSE

RISK MANAGEMENT



Don't let the future of your business go up in flames

Firms can be ruined by disasters, such as fire or floods. David Cross looks at how to manage the threats and survive

MANY organisations that suffer total loss of their data processing functions trading as a direct result. Nevertheless, computer networks, especially in industries where there is a high volume of transactions, are an integral part of the business. Airlines, banks, insurance companies and building societies would find it almost impossible to function without data processing.

As reliance on computers increases, medium-size and even small firms are finding that their day-to-day business is becoming inextricably bound up with information technology. High levels of investment in computer equipment have meant increasing dependence — to the point where system failure can have disastrous effects.

In order to minimise the potential dangers, many businesses have adopted a "risk management" approach. Far from being a merely intellectual exercise, this technique has directly saved many companies.

It is a method of approaching the problem of how to deal with threats such as fire or flood, which can endanger a computer-based system. The objectives are to

maintained to avoid electrical short circuits.

Fires may also start where forms are kept in data-encoding or programming areas, which should be carefully supervised.

Smoke, heat and corrosive gases may enter through doors, windows, elevator shafts or air conditioning ducts. Tapes and disc packs may be seriously damaged in temperatures as low as 150 degrees Fahrenheit.

The first consideration to avoid these potential dangers must be the building in which the computer is housed. It should obviously conform to current fire safety standards and be separated from hazardous materials and operations.

Fire detectors should be used within the computer room to provide prompt, positive warning. The newest systems use detectors that are able to report the materials which are causing the fire. In adjacent areas, rate-of-temperature-rise detectors should be used, and, if possible, these should be installed throughout the building.

The control panel, which monitors those devices, should include enough indicators to make it easy to pinpoint the location of a fire. Ideally, the system should also be connected to the local fire station to ensure a rapid response.

By appointing a "fire team" small blazes can be controlled internally, but these should not be used as a substitute for the real fire brigade! At no time should they put their own lives at risk. Ample portable fire extinguishers should be provided, and preferably an automatic extinguisher system.

Precautions must also be taken with regard to water. This can come in the form of natural flooding, broken pipes or water from fire-fighting equipment.

Another potential threat is deliberate destruction — sabotage, vandalism, arson or bombing. Extremists, vandals, extortionists, strikers, rioters and even angry customers or employees have been known to cause a great deal of damage. To counter this type of threat, the building, in terms of position, construction and methods of controlling access, must be considered carefully.

Everybody and everything entering the building should be checked, and visitors asked to use badges. Security guards or surveillance equipment are expensive but effective ways of watching your premises, although the equipment only works if it is properly manned and maintained.

Staff must be made aware of the need for watchfulness, and locks and badges should be periodically changed. Finally, personnel should be constantly screened and an ear kept to the ground for any signs of unrest.

In addition to these precautions it is essential to ensure that regular security copies are taken, and that at least one copy is kept off the premises. Then, in the event of a

disaster, these copies can be used on an alternative computer.

Imagine a company that has made a substantial investment in computer equipment. Being prudent, it appoints a risk manager; trains its staff to be fully aware of potential threats; and takes every conceivable precaution to guard its computer equipment. Having done all of this, it still has to deal

with Murphy's Law: if something can go wrong, it will.

To counter this most unpredictable of threats, the organisation must have adequate contingency plans. These plans should provide insurance for the present monetary value of the equipment, so that it can be replaced if lost.

The second, and even more vital, part of the contingency plans

is to have immediate access to an alternative data processing capability. This is usually referred to as a "disaster recovery" service.

One of the leading companies offering such a service for Digital Equipment users, is Allen Computer International (ACI). It is a London-based DEC OEM, which offers bureau, personal computer and word processing facilities.

At ACI's data centre, operations can be recommenced rapidly with a minimum of disruption when someone's site ceases to function normally.

Its "disaster plan" for Vax and PDP-11 computers has two levels of service. The first level allows a company to use a suitable configuration on a timesharing basis. Staff can either continue to work from their own offices by using the data centre's communications network, or they can use ACI's premises in central London.

The second option provides a suitable computer configuration to run the software that is required. Emergency utilisation of this resource is available on a "sole users" basis. Once again, staff may use the facilities at the London data centre, or gain access to the system via remote communications.

The emergency recovery service is available to subscribers 24 hours a day, seven days a week. Experienced operations staff are always on site, ready to provide assistance on an "escalator" basis, depending on the severity of the problem which has occurred.

The details of a company's current configuration are checked

Everybody and everything entering the building should be checked, and visitors asked to use badges... Personnel should be constantly screened

when it joins the service, as well as the applications software and current operating system. This is to ensure full compatibility and to eliminate any difficulties should a disaster occur.

As part of the service regular dry-runs are undertaken, where discs and tapes from the user site are run at ACI's bureau.

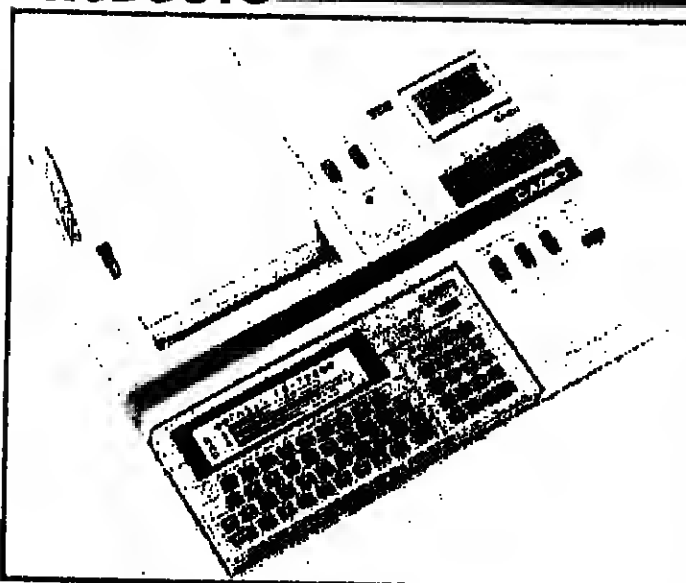
Naturally, security is of the utmost importance to a service like this, and ACI only allows fully authorised personnel into the computer section of the data centre. Even to gain access to the reception area requires the use of a controlled entry system.

As businesses, public utilities, government departments, charities, hospitals and services increasingly rely on computers, safeguards must be put into operation. To ignore this requirement is not merely to risk the cost of the equipment, but to put in peril the continued existence of the organisation itself.

The safest course of action involves the appointment of a risk manager; sufficient insurance to cover the replacement value of your computer equipment; and guaranteed access to a disaster recovery facility.

David Cross is a freelance journalist.





The Casio PB700 personal computer in FA10 cradle.

Pocket-size personal

THE start of a progressive push into the personal computer market is marked by Casio's launch of model PB700.

Using four penlight toroid batteries for up to 100 hours of continuous use, PB700 measures 7 1/2 x 3 1/2 x 1 1/2 inches and weighs 11.1 ounces, yet it has 4K RAM, expandable to 16K RAM in 4K steps.

A qwerty layout keyboard and a 4 line x 20 character LCD display are included in this small package. The display can also show 160x32 dot graphics.

Using an extended Basic, the keyboard can be used to enter upper and lower case characters, Basic keywords, symbols, and numbers on the separate numeric keypad.

The PB700 is supplied with an

instruction book, quick reference guide and carrycase.

Casio is also introducing the FA10 cradle. This is A4 size and has a four-colour plotter/printer using 4 1/2 inch plain paper, an external cassette port with remote on/off and a section to take the optional CM1 microcassette deck.

FA10 is supplied with a carrycase, two rolls of paper, four colour pens, external cassette leads and an instruction book. The complete package weighs under 5lb.

Recommended retail prices are: PB700 (4K) £139; FA10 printer/plotter £189; OR4 (4K RAM) £29.95; CM1 microcassette £65. All prices include VAT.

Casio Electronics Co (CW), Unit 51x, 1000 North Circular Road, London NW2 7JD. Tel: 01-458 9131.

Micro designed with builders in mind

BUILDING contractors are the target for a new micro system from Wilcox Computers. The Wilcox 2000 is a switchable 8- or 16-bit micro with three software packages designed for estimating, costing and sub-contracting applications.

The company has only a 2% market share in this industry from its earlier systems, but company chairman Robert Shove says an independent survey of the market by PA Consultants indicates that the System 2000 "has a bright future ahead."

The building industry has just come through a severe recession, says director Dennis Wrigley. "As a result the margin for error in estimating is extremely small and the need for a computer system which can keep track of estimates and stocks is obvious."

The main problem with selling computers into this industry is ignorance on the part of company

managers, says Wrigley.

The micro is a departure from those previously offered by the company in that it uses "industry standard" components, including Z80A and 8088 processors and the CP/M operating system, in place of in-house developments.

Internal management of the system is handled by an eight-bit 6502 CPU which also controls the 15 inch screen display.

Internal storage is 512 kbytes. The software is written in CIS Cobol though Shove says the system will support any high level language.

The entry level price for the system is about £5,000.

Production at the Wrexham factory is ten machines a month - all destined for clients in the building industry.

Wilcox Computers Ltd (CW) Rackery Lane, Llay, Wrexham, Clwyd LL12 0PB. Tel: (0978-83) 4866.



Bull Peripherals' portable test unit.

Portable test unit

NOW available from Bull Peripherals UK is a lightweight portable test unit which has been designed to test the entire range of 10 1/2 inch and 5 1/4 inch disc drives (5-120 megabytes) manufactured by Bull Peripherals in Belfort.

Featuring a ST 506 industry standard interface, the PTU can also be used to test other manufacturers

disk drives using the same interface.

The test unit allows the user to set his own test parameters by linking together a series of resistors.

Bull Peripherals UK (CW) Kingswell House, Sunningdale, Berkshire SL5 7BL. Tel: 0934 23491.

PRODUCTS Speed-up for the Apples

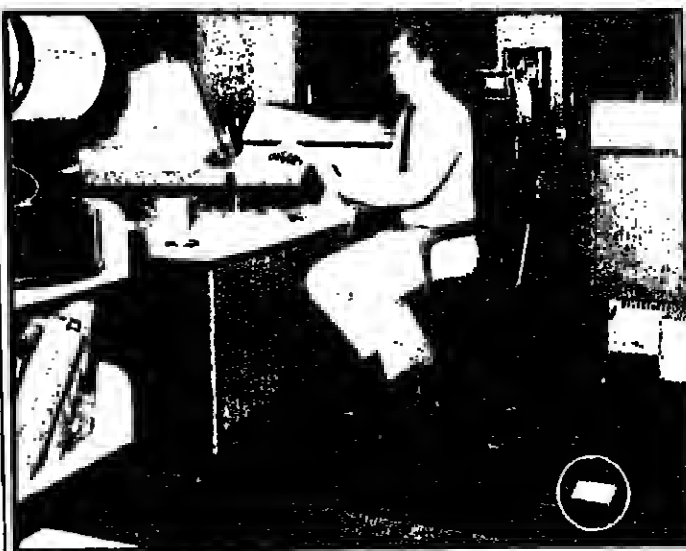
FIRST product from the newly-formed Digital Research hardware division is CP/M Gold Card, an add-on for the Apple II, II+, and IIe series of personal computers which is said to allow CP/M applications to run on these machines up to three times faster than with competitive cards.

CP/M Gold Card is a printed circuit board that plugs into any internal connector slot in any Apple II.

CP/M Gold Card uses a six-megahertz Z80 microprocessor with 64 Kbytes of on-board memory and an optional cache memory of 128 Kbytes. In addition, optional cache memory can enhance performance in many applications without the user having to make any changes in the program.

The CP/M Gold Card will sell in two configurations: £399 for basic capabilities and £640 with the 128 Kbytes cache memory feature.

Digital Research (CW), Oxford House, Oxford Street, Newbury, Berkshire RG13 1JB.



Clean Tread's anti-static mat.

Anti-static protection

CLBAN Tread Service is supplying anti-static mats to protect mainframes and microcomputers against damage caused by static electricity.

Charges of between 3,000 and 5,000 volts will build up merely as the result of a person walking across a carpeted room or when an operator moves position on a chair and may introduce errors into

programs and in some cases burn out silicon chips.

The new mats are positively earthed to a standard well socket which rules out the possibility of any static contamination and they can withstand repeated washings without any deterioration in anti-static properties.

Clean Tread Service (CW), Furnage Street, London SW18 4DF. Tel: 01-874 4333.

Sales system with insurance brokers in mind

A MICROCOMPUTER designed for insurance brokers is announced by Kalamazoo.

With the Kalamazoo system, the broker's staff will have prompt access to all renewals and related data. In addition, staff are released from time-consuming manual routines, and are able to concentrate on prospecting, selling, and writing new business, says the manufacturer.

The system is based on the recently-introduced K2150 hard-disc multiprocessor microcomputer, designed, manufactured, sold and supported exclusively by Kalamazoo. For use with the K2150, a software package for brokers has been produced by a team of specialists in Kalamazoo's R&D department.

The software package makes entries on receipt of cash, prepares and reconciles banking, keeping running totals of the broker's ac-

counts, aids reconciliation with the insurers, and maintains a range of management statistics which include control of debtors, instalments, and overdue accounts.

To these can be added client accounting and statement production for credit policy holders, and monthly settlement statements for larger cash clients. The system automatically produces pre-renewal lists and renewal invitations.

Operating the Kalamazoo system is simple: a conversational routine displayed on the VDU screen is used. If, for example, the operator is using the wrong insurance company for a particular type of business, a message on the screen will indicate this.

The cost of the system is £5,275 depending on configuration; the basic software package, £1,975.

Kalamazoo (CW), Northfield, Birmingham B31 2RW. Tel: 021-475 2191, ext 560 or 435.

Cromemco personal upgrade

CROMEMCO has developed a full-size professional keyboard for the C10 personal computer and is to make available a range of industry standard software packages.

These packages include Wordstar, MailMerge, InfoStar and CalcStar.

In addition to the standard qwerty key set, the new professional keyboard features a 14-key numeric pad for fast data entry, and 20 function keys to speed frequently-used keyboard operations. No alterations are needed to use the new keyboard.

New third-party software packages have been tailored to run on this Z80-based machine.

The C10 has extensive in-built communications facilities allowing several units to be interconnected and used as distributed workstations in a networked environment, or to function as intelligent terminals (front-end processors in large installations).

Cromemco (CW), 30 Dundas Street, Edinburgh EH3 6JN.

Screen star. Supporting cast.



The TeleVideo 924.

In a family of great performers the TeleVideo 924 is truly a star performer. Bringing the power and versatility you would expect from the world's leading independent manufacturer of video display terminals.

Ergonomically designed, to both fit and survive, the non-glare high contrast CRT combines beauty with brains. Packed with features, which include 16 non-volatile programmable function keys, 64 special graphics characters, 32 non-embedded visual attributes, combinations, programmable delimiters, buffered printer, and a reprogrammable keyboard.

Not in the 924's one night wonder, it will go on performing with dynamic reliability for years to come. In a world of mounting video display terminals, the TeleVideo 924 performs (or would perform) as well as any other. So why not make a reservation with the able and reliable Mellordata?

As a supporting cast we will not be as well known to you as the star performer on the left.

In bettering the service that you can offer your customers though, we are just as essential.

Because a professional back-up service can mean the difference between you giving a customer the service he wants or giving him problems he can do without.

We'll give you, for example, a firm and competitive price.

We'll give you a definite delivery date (as a promise, not a guess) and we'll provide all the advice you need to make the most of every machine you sell.

From a printer to a touch sensitive screen and beyond. And we guarantee our concern won't stop with the delivery.

Mellordata's Field Engineering Group has been on the road for ten years keeping computers computing.

It all adds up to a service which has been greeted by warm applause wherever we have performed.

As with any performance though, it's always best to be your own judge.

Authorised distributors for TeleVideo and Mannesmann Telby. Exclusive distributor for Datamedia and Carroll Touch Technology. Authorised main dealer for Epson.



NEW TECHNOLOGY IN EXPERIENCED HANDS.

Mellordata Limited, Woodgates Road, Eastleigh, Hampshire, England. Telephone: (0703) 24981. Telex: 58766 MELLORD G.

Monitor offers sharp graphics

ZENITH Data Systems has launched a colour monitor, the ZVM-133, which can display an infinite array of colours and intensities with sharp graphics, according to the manufacturer.

A high resolution colour graphics monitor, it is designed for use with Zenith's own range of desktop computers, the Z100 series. It is also compatible with most business microcomputers having RGB direct drive outputs, such as the IBM Personal and Apple III.

The ZVM-133 has a 25 line by 80 characters display and pixel resolution of 640 dots by 480 lines (interlaced), which creates impressive graphics. It has a wide bandwidth of 20 MHz with the rise time of 70 nanoseconds to generate crisp lines, pure colours and intensely clear copy.

Front-access user controls enable convenient operator adjustments. An LED indicator notifies



The Zenith colour monitor.

the user when the monitor is operable.

A "green screen only" feature incorporated in this colour monitor eliminates all other colours. This enables monochromatic material to be displayed on the black face of the screen.

DC-coupling permits the video display to retain its colour balance from a single dot to full screen data.

The ZVM-133 monitor is priced at £395 plus VAT, and quantity discount packages are available. Zenith Data Systems (CW), Bristol Road, Gloucester, GL2 6BB. Tel: (0452) 29451.

Page faxed in 30 secs

INFOTEC has launched a new version of its 6400 facsimile transceiver with a V24 interface which allows the transmission of data between external modems on leased lines as well as the national telephone network.

Called the 6400 VM, the new model allows documents to be used on existing data transceiver lines. It will also operate with a suitable time division multiplexer as part of a multi-terminal network sharing a single line.

Fully compatible with the latest Group III facsimile machines, the desk-top 6400 VM can transmit a standard A4 page in 30 seconds. It uses thermal printing techniques to give a high contrast reproduction.

The 6400 VM is approved by British Telecom. Infotec (CW), Hoechst House, 50 Salisbury Road, Hounslow, Middlesex TW4 6JH. Tel: 01-572 2761.

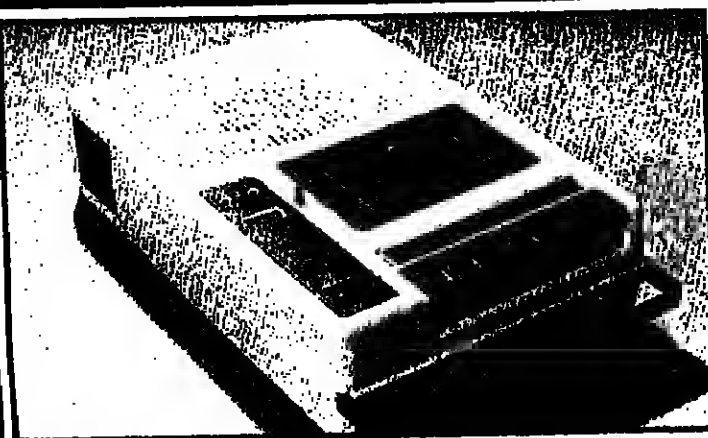
More power for Pyramid

DELTA Data Systems has extended the power of its Pyramid terminal system with the launch of a new microprocessor unit with integral Winchester disc drive and 16-bit capability.

Like all the hardware in the Pyramid range, the two versions of the new microprocessor, the Pyramid 504 (16-bit) and 505 (Winchester) are UK designed and manufactured.

A Pyramid user can start with the existing 501 processor with twin floppy disc drives and, by in-place enhancements, move on to a 16-bit processor or Winchester disc or both. Such enhancement possibilities make the Pyramid a much more powerful and versatile system, says Delta.

The Pyramid 504 is available now and the 505 from April. Delta Data Systems (CW), Swallowfields, Welwyn Garden City, Herts AL7 1JD. Tel: Welwyn Garden City 33833.



Audio and data recorder from Bell & Howell.

Heavy-duty recorder

A HEAVY-DUTY cassette recorder for the BBC, Acorn and other personal computers has been developed jointly by Bell & Howell and Leasinglink Viewdata. It is being marketed through the two companies' retailers as the Bell & Howell 3179CX.

The recorder is based on a system designed for use in schools. The educational pedigree of the design is evident in the operating keys with their function symbols in relief so that blind users can identify them by touch.

The 3179CX has an internal microphone as well as an external loudspeaker. Two

headphone sockets are provided for private study as well as a socket for remote control of the drive motor by the computer, an external switch or an optional switch on the external microphone.

The recorder follows educational practice in having "cue and review" modes. These allow fast forward or backward winding to be done with the "play" key depressed so that playback begins immediately.

Bell & Howell (CW), Alporton House, Bridgewater Road, Wembley, Middlesex HA9 1EG. Tel: 01-902 8812.



The C3005 from Country Computers.

Launching into networks

COUNTRY Computers, a Red-ditch-based manufacturer, enters the network market with the launch of the C30005.

The central system server can accommodate up to 15 users, all with their own Z80A processor with 64K RAM. Unlike many other multi-user systems, data transfer is handled at full processor speed over the system's bus, improving system throughput and minimising the bottleneck found in some systems.

Because all five processors have been designed on a single PCB for

maximum reliability, a letterbox technique allows users to communicate directly with each other without the intervention of the system server, permitting instant transfer of electronic mail.

Optional system software has been enhanced to include multi-key ISAM with powerful print spooling features.

The system is priced at under £5,000.

Country Computers (CW), Pipere Road, Park Farm Industrial Estate, Redditch, Wores: B98 0HU. Tel: (0527) 29826.

PRODUCTS

Memorex enters the integrated office

DESIGNED for both data processing and word processing applications, the 2068 is the first of a series of announcements which Memorex believes will put it in the forefront of the integrated office.

The 2068 offers matrix printing at 350 characters per second and quality text at 80cps. It will attach to IBM as well as to Memorex controllers.

A major feature of the 2068 is that character, style and shape can be changed in flight giving bold headings and italic script for added impact.

The printer also offers condensed and proportional printing and a full range of paper handling options, all selectable either automatically from the CPU or through the operator control panel.

The 2068 is priced at £3,995. Demonstration machines are already available with volume deliveries scheduled for April.



The 2068 from Memorex.

The new printer joins Memorex' 2000 Series of 3270 compatible displays, controllers and printers. The 2068 printer is the first of a series of major products to be announced in the next few months by Memorex.

Memorex UK (CW), Memorex House, Church Street, Staines, Middlesex. Tel: Staines 51488.

Electronic publishing on the Perq

PROLOG Software Limited has launched a text processing software package called QED which has been developed for users of ICL's Perq raster graphics workstation. QED is used in conjunction with the LBP-10 laser printer from Sintrom Electronics.

Developed by Oxford University's Program Research Group, QED produces documentation which requires more than conventional word processing can achieve, but for which full-scale typesetting would be inappropriate, says Sintrom.

Examples include the production of technical manuals, sales guides, staff handbooks, research reports and newsletters.

QED is fully compatible with Prolog Software's 2-D drafting system Perq DP, and meets all the common composing requirements including a variety of type fonts,

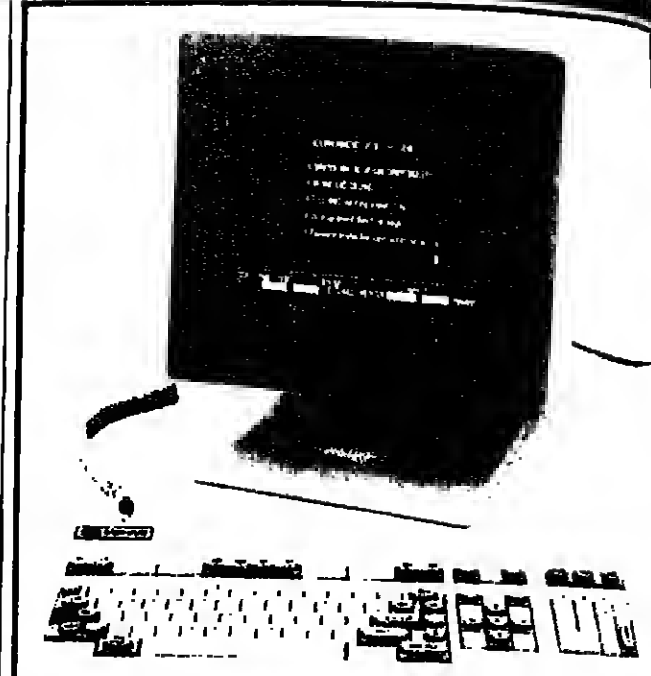
text justification to left or right margins, cut, fill and paste options and true proportional spacing.

Additionally graphics such as pictures, diagrams and charts can be placed alongside or included within bodies of text, and the user can see each complete page on the Perq workstation screen and make amendments before final printing.

Final copy is produced on a high resolution Sintrom LBP-10 Laser printer.

To maintain good resolution, QED maintains two font files for each character set, one at Perq resolution to display text on the screen, the other at 240 pixels per inch for use on the Sintrom printer. This gives better print quality than doubling up on pixels when using an increased resolution print device.

Sintrom Electronics (CW) 14 Arkwright Road, Reading, Berks, RG2 0LS. Tel: (0734) 875464.



The Beehive FT20 Ansi-compatible terminal.

Eurobee family grows

BEEHIVE International (UK) announces that its second Eurobee terminal, the FT-20, is now in production at the company's factory in the Irish Republic.

The new terminal, designed with users of DEC equipment in mind, follows the launch earlier this year of Beehive's FT-10 and forms part of the family of three smart ergonomic VDUs produced for the European market.

The terminal configuration manager feature developed by Beehive allows many functions to be initiated, direct from the keyboard without resorting to complicated switching. An Ansi-standard editing terminal is a choice of either 80 and 132 column format.

Based on the Intel 8084A-2

10MHz microprocessor, the FT-20 is designed for more specialised OEM applications or, for the end users, can serve as a viewpoint in a database environment. Typical applications for this buffered VT100 compatible terminal are message communications, enquiry/retrieval, transaction processing, distributed data processing and process control.

Beehive's 52,000 sq. ft. factory in Co. Cork and the Ascot marketing company were set up 11 months ago to handle European trading. The US parent in St. Lake City has been established since 1969.

Beehive Ireland (CW), Edeally Road, Fermoy, Co. Cork, Ireland. Tel: (025) 31777.

NEC joins dot matrix market

NEC has entered the dot-matrix printer market with the Pinwriters family, available from Thame Systems.

There are currently two models in the range. The P2 is an 80-column device, while the P3 is a full-width 136 character machine; otherwise all features are common to both models.

The Pinwriters are multi-mode printers. There is a draft speed of 180 cps, a high density mode of 90 cps, and a near letter quality mode of 30 cps. All three modes are either hardware or software switchable, as is the ability to switch font styles in the midst of printing text.

Standard fonts are Pica, Elite and Condensed pica, with the provision for downloadable fonts also being standard.

The long life print heads (200 million impressions per pin) are of 18 wire staggered configuration for maximum dot density and long life. This is borne out by MTBF figures of 4,000 hours and a thereafter average repair time of 20 minutes.

Thame Systems (CW), Thame Park Road, Thame, Oxon OX9 3KD. Tel: 684 421 5471.

Micro fault locator

A MICRO system fault locator has been launched by GP Industrial Electronics. Called the MFL 373, it is designed for fast fault-finding and de-bugging prototype micro-based hardware.

Operation is based on simulation, which allows all the lines of a system bus to be independently driven and sensed. The microprocessor of the system under test is replaced by the appropriately matched test pod of the MFL 373.

GP Industrial Electronics (CW), Oak E, Huxley Close, Newnham Industrial Estate, Plymouth. Tel: (0752) 832951.



Micon Eye from ESI.

Computers get the eye

COMPUTERS can be given an eye, with the new Micon Eye, a solid state image sensing unit using Micon Technology's OptiRAM.

The package includes camera lens, tripod, 6ft telephone cord (camera to computer), floppy disc with camera software routines, instruction manual and serial TTL interface for Apple II, IBM-PC, Radio Shack TRS-80 CC, Sinclair Timex or Commodore 64.

Most popular baud rates are provided by the Micon Eye interface. Options include spare IS32 OptiRAM 25ft telephone cord, IS32 Bullet with 4ft interconnecting cable, zoom or macro lens and RS232 interface.

The camera has 128 x 256 element resolution capable of transmitting up to 20 frames per second. Software is delivered on a floppy disc with self-promoting command modes allowing continuous scan, freeze frame, frame start or compare frame to frame.

ESI Components (CW), Brighton Hill Parade, Brighton Hill, Basingstoke, Hants. RG24 8EP. Tel: (0256) 57166.

Business sense

Common sense

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Terry Booth, General Manager
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NEAT 3 Senior Programmer NCR to IBM career opportunity Northern Home Counties

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Martin Burgess (Ref: B541), Personnel & Training Department, British Aerospace PLC., Dynamics Group, P.O. Box 19, Six Hills Way, Stevenage, Herts. SG1 2DA

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- Programming in RPG II or RPG III

Applications currently operating in the group include a bespoke order entry and sales ledger system running at a number

of regional sites on IBM system 34 computers.

New projects recently introduced include a manufacturing system running at one of our factories and the installation of a group financial accounting and management reporting system with a number of remote user sites. For this latter purpose the company has just taken delivery of an IBM system 38 computer at head office.



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Profile

Our client, a leading International Petrochemical Organisation, has commissioned the TASK FORCE Group to recruit a team of highly-motivated Computer Professionals to form the basis of a rapidly expanding development department.

The exceptional opportunities being presented, provide a dynamic framework in which to contribute skills relating to database design and administration, systems and programming and computer operations.

The achievable earnings potential is significant. Our client offers an environment which is both pleasant to work in and has considerable prospects for career progression and development. The benefits package includes competitive tax free salaries, single or married status, air-conditioned accommodation to a high standard, air fares for employee and immediate family. In addition, the company extends financial assistance to dependants attending school up to completion of secondary education and also provides an interest free car loan to a maximum value of 36,000 Dirhams. All positions are permanent-renewable on a 2 year basis.

The climate in the area is hot and humid in summer, temperate in autumn but moderate and pleasant during the rest of the year. Abu Dhabi is a modern city with good shopping, communications and recreational facilities. Primary and Secondary schools are available. Annual leave is 42 - 48 days dependent on seniority.

Our client operates an IBM 30XX series running under MVS/SP, CICS, TSO, VSAM, DL/1 or IMS DB/DC, FORTRAN, COBOL and PL/1. Full job specifications and academic criteria are available for all positions advertised.

Please ring the Stoke office or send C.V.
44 Kingsway
Stoke-on-Trent (0782) 410217
Staffordshire
ST4 1JH.

Requirements

- * SENIOR SYSTEMS ANALYST (TECHNICAL) REF: AA
SALARY £23,350 - £28,500 PER ANNUM TAX FREE
- * SENIOR SYSTEMS ANALYST (BUSINESS) REF: BB
SALARY £23,350 - £28,500 PER ANNUM TAX FREE
- * SENIOR SYSTEMS ENGINEER REF: CC
SALARY £23,350 - £28,500 PER ANNUM TAX FREE
- * SYSTEMS ENGINEER REF: DD
SALARY £21,000 - £22,000 PER ANNUM TAX FREE
- * SENIOR PROGRAMMER REF: EE
SALARY £18,000 - £22,500 PER ANNUM TAX FREE
- * SHIFT LEADER REF: FF
SALARY £15,500 - £19,500 PER ANNUM TAX FREE
- * DATABASE ADMINISTRATOR REF: GG
SALARY £23,500 - £29,000 PER ANNUM TAX FREE
- * SYSTEMS ANALYST REF: HH
SALARY £21,000 - £26,500 PER ANNUM TAX FREE

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FORCE**

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DIRECTOR/SECRETARY

759324 JB 012345678

Our Client, a world wide Company, requires for Saudi Arabia: Analyst/Programmers - Hardware and software specialists - Scientific Programmers - Seismic Programmers - Systems Programmers - Graphic Equipment Operators and Teacher Trainers with technical skills on one or more of the following: IBM, DEC, VAX, PDP,

WANG, MICROS, TSO/SPF/IMS/DPC, COBOL, PLI, FORTRAN and an opportunity to learn new techniques and skills.

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0273/202316

EUROLINK
COMPUTER SERVICES LIMITED
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Hoechst



THE COMPANY

The largest pharmaceutical company in the world, Hoechst employs over 7,000 people in the U.K. alone. In addition to its activities in the fields of medical products, industrial plastics, animal health and plant protection, Hoechst subsidiaries and associated companies include such household names as Berger Paints, Rochas perfumes, Trevira, Clynol and Cuprinol. The U.K. headquarters is a modern purpose-built office complex situated at Hounslow, easily accessible by road, rail or the London Underground.

THE DP ENVIRONMENT

Currently an IBM 4341 model 2 running MVS, CICS, DL/1 and COBOL, with a 3083 model E due to be installed in March. In addition, Hoechst is committed to personal computing, with 19 Apples in use under the guidance of an Information Centre.

THE VACANCIES

Two project leaders are required initially, with further expansion planned. They must be experienced systems analysts, preferably - but not essentially - with an IBM background and a good understanding of TP and database concepts and practice. Similarly, the successful applicants need not be former programmers, but they must be able to lead a programming team. The principal qualities needed are powers of leadership, self-motivation, and the ability to take a project from feasibility to implementation.

It is unlikely that candidates with less than four years' relevant experience will be suitable.

PROJECT LEADERS

to £15,000

plus substantial benefits

THE REWARDS

are considerable! With a basic salary of up to £15,000 pa, a review in June, a bonus based on Company results (an additional 2½% paid in 1983) and the possibility of an Exceptional Merit Bonus of up to 8% of salary for outstanding employees, financial rewards are among the best in the industry. In addition, benefits include:

- free private medical insurance
- subsidised staff restaurant
- discount company shop
- 23 days leave per year
- 35 hour working week
- full relocation expenses where applicable

and the many other advantages that only working for a major multinational corporation can bring.

YOUR NEXT MOVE

is to telephone 01-499 1948 for an application form, quoting ref. GM/273, or write with a FULL cv to Geoff Mackenzie, P-E Appointments Division, 166 Piccadilly, London W1V 9DE.

The P-E Consulting Group

PE

ICL COMPUTER PROFESSIONALS

Come on board Britain's most progressive ferry company. Townsend Thoresen, part of the European Ferries Group has consistently been voted top ferry company by the travel trade. This success has led to a major expansion of the group's computer activities based at Dover. A real time reservations system is in operation with terminals throughout the UK and on the continent. This system also hosts an interactive agency viewdata system utilising PRESTEL GATEWAY. Operations are based on twin ICL 2986s. The service is provided 24 hours per day, 363 days per year. The viewdata system is front ended by a MODCOMP classic configuration. Additionally, support is provided to several micro installations throughout the UK.

SYSTEM SUPPORT PROGRAMMER

A system programmer is required to join our busy technical services section.

Four years' sound experience is required at least one of which must have been spent in a VME support role. Experience of one or more of the following would be an advantage: COBOL, PASCAL or DME. The right candidate must be able to demonstrate the ability to work on their own initiative.

ANALYSTS

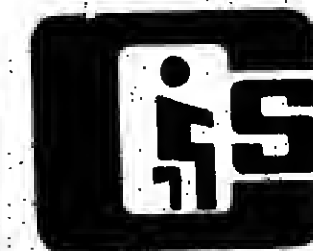
Experience of VME/DME transition will be of particular interest, as will practical experience of on-line systems, database, mini and micro systems. Candidates with limited analysis experience having a solid programming background, will also be considered.

These positions offer excellent opportunities, highly competitive salaries and benefits package which includes concessionary travel and pension scheme.

Please apply with full c.v. to
Derek Weaver
Senior Personnel Officer
Townsend Thoresen
Enterprise House
1 Channel View Road,
Dover,
Kent
CT17 9TJ

TOWNSEND THORESEN

Turn to
pages 64 & 65
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Permanent and
Sales Positions



COMPUTASTAFF

Analysts with mini experience A management opportunity.

Croydon Area £14K package

Our client is a leader in their sector of the Advertising Industry, employing 500 people at 5 locations and with a group turnover of £18million pa. They have recently installed a PRIME 550 and are in the process of converting existing systems from both Bureaux and an in-house IBM System 34.

These predominantly bespoke systems are written in RPG II and are being converted with the aid of ESCAPE 34. Applications include:

- Sales Order Processing
- Management Information Systems
- Payroll
- Nominal, Purchase & Rent Ledgers
- Fixed Asset Registers

DP Manager

They now require a DP Manager to take over the management of a department of 5 people, have budget responsibility and report directly to the Finance Director.

In particular, the DPM will need to review existing systems and, in the light of additional requirements and new facilities available on the PRIME, produce a 3 year plan. The objectives being to:

- ensure the best use of existing facilities.
- introduce potential enhancements (system generators & 4th GL).
- co-ordinate activities with external systems at associated companies.
- increase the use of microcomputers, for possible Distributed Processing.

You'll need to have at least 2-3 years good system design experience on minicomputers (ideally PRIME), an understanding of relevant commercial applications, be able to interpret user requirements and specify solutions to them. Since this is a dynamic environment which will involve you in negotiating with and supervising external software houses and programming staff, it is essential that you communicate well both orally and in writing.

Consideration will be given to relocation assistance where appropriate. To take your first step up into management, telephone Hugo Fair on 01-828 6846 or send your CV to: NSH Associates, 205 Victoria Street, London SW1E 5NE.

NSH



c. £11K

Aarque Systems Limited are a leading supplier of equipment and materials to drawing offices and print rooms with products ranging from the most sophisticated reprographic systems to drafting materials. They are both manufacturers and distributors in the U.K. with a head office at Colnbrook, two regional depots, 13 branch offices and 13 print shops, employing a total of 800 people.

Computer Aided Design and Drafting (CADD) has been available in the U.K. for many years but has traditionally been reliant upon large and expensive computers which has meant that the majority of drawing offices still rely on manual methods of drafting. With the recent dramatic growth in the sophistication of micro-computers, practical CADD systems are becoming available at a fraction of the previous cost bringing these systems within the affordable reach of even the smallest drawing office.

Aarque are forming a new division which will market a complete range of low cost micro-computer based CADD systems. Initially, Aarque CAD centres will be in London and Derby and plans are well advanced for other locations.

...tomorrow's
Drawing Office
technology -
today.

London & Derby

Their sales philosophy is to provide 'hands on' demonstration facilities for potential clients at local showrooms where there will be a number of different systems on display.

The Sales Support Engineer will give demonstrations and liaise closely with potential customers regarding their specific requirements. Experience of design/drawing office practices and a knowledge of micro-computers is therefore highly desirable.

Major company benefits will also complete the attractive package - including BUPA; Pension Scheme; Company Car, etc. For more details of these exciting opportunities please contact: Jim Wallis.

office day: 01-741 6011
office night: 01-748 1967/1975/2160
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271-273 King Street, London W6 9LZ.

CADsearch

★ TRAIN IN USA ★ CUSTOMER ENGINEERING

Leading multinational manufacturer, secure and fast-growing, seeks keen, young Engineers to train on special systems and advanced techniques. Sound electronic background essential - disk experience a bonus. Excellent training (US/Europe/UK). Benefits include realistic salaries (£9½-£12K+car, o/t, etc.), friendly management ensures career advancement, regular reviews, etc. Opportunities NOW in London, Home Counties, Midlands and North-West. OTHER OPPORTUNITIES: Engineers with exp. of DEC/DAL/4-instructional, etc. for London/Home Counties; and Data Comms exp. for E Anglia.

Whatever your requirement - expand your career NOW - RING MIKE HILL ON 01-849 6441 (Office) or 01-394 2359 (outside office hours and weekends, etc.).

cb executive (kingston) ltd

LOOK NO FURTHER! SYSTEMS 38 ANALYST/ PROGRAMMER WITH RPG3 EXPERIENCE

- Salary negotiable circa £11,000 p.a.
- Prestigious Company
- Small, established team
- Attractive Thames Valley location

If you have a minimum of 12 months' practical experience in the use of a real microcomputer, and the ability to design and implement programs for a business environment, we would like to hear from you.

So please the Personnel Department on Monday 17.24 for an appointment to discuss your application.

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Chesham Pond Ltd.

Managers

Varied career, balanced personality, assertive and ambitious. Probably 30 to 35, you will have that quality which engenders confidence in your seniors and wins respect from your peers.

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You will already have made significant achievements at project level. You are well organized with proven experience leading people, problems and solutions for management.

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Your specialist skills have developed over several years. You command respect for personal ability and enjoy being recognized for individual contributions.

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The life blood of the industry. Managers, project leaders and designers of the future. Diverse level of education. Enthusiasm and keen to prove yourselves.

Euro. S/W Supp. Manager

Herts. c£20K + car
Experience in a customer support environment is essential for this position. Candidates must be capable of technical appraisal of reported software difficulties, prioritising their status and allocating appropriate resources. The job will require diplomacy and resilience in dealing with senior managers across several national boundaries. A European language other than English would be a major asset. Major company benefits.

Proj. Leader L.A.N.'s

Herts. c£15,000
The ideal candidate for this position will combine a strong background in development methodology with skills in personal communication to work closely with marketing people in the U.K. and U.S.A. He/She will be responsible for a team of 5 to 10 people developing network system products. We would prefer to hear from people with a computer science degree and Pascal/Algol programming skills.

Support Consultants

Herts. to £17K + car
This is a high level support position working in close liaison with company's sales force. Candidates will be capable of providing assistance with technical expertise and general business advice to support the sales force and prospect base. Work will involve demonstrations, presentations and customer assistance during the pre-installation period. Experience with sophisticated micro/minil business systems essential.

Micros/Minis S/W Progs.

Berks/Herts. £8K-£13K
A specialist product company which has developed PDP 11 and Z80 based systems for the travel and communication sector and a scientific instruments manufacturer which uses PDP 11 for real-time control are both seeking programmers to join development teams. We will be looking for mixed experience from the following: Z80 assembler, Macro-11, Fortran, C, PL/Z, CP/M, RSX-11 and UNIX.

O.S. Software Manager

Herts. to £16,000
A chance for a junior manager to build a new career. It is essential for candidates to have previous experience in design and development of operating system software. He/She will be responsible for a small team which will introduce UNIX to an existing product line whilst continuing to be responsible for current O.S. software revisions. Previous UNIX ideal but not essential.

Team Leader

Beds. £12.5K to £16.5K
Our client, an independent subsidiary of a large successful engineering group, has designed and developed an extremely successful product in the E.P.O.S. market. In the last 18 months turnover has doubled and additional people are required at all levels. The team leader will be responsible for new developments covering planning, quality and budget. Assembler and high level language background. T19900 and RTL2 ideal.

Comms. in Banking

London to £18,000
This is a particularly attractive part of the computer industry combining, as it does, the areas of international high finance and constantly improving computer communications systems. Our client has a lengthy background in this area using DEC equipment and now requires additional development and support staff. Good commercial experience in banking or finance is the major requirement.

Comms. S/W Design

Herts/Beds. to £14,000
Develop your career and your communications software skills by joining a company whose existing range of comms. software is second to none. There are a number of teams working on various developments covering LANs, X25 and 3270 compatible products. Development is on mini end micro systems in assembler and high level languages. Reloc. assistance where appropriate.

Mgr. Systems Installations

Berks. £15.5K + car
Our client, a world leader in micro based environmental control systems requires a technical manager to control further development of existing software and manage the installation of complex systems on client sites. The successful candidate will have several years experience in a mixed software/hardware environment, project management, staff selection and will be responsible for all new software applications taken on by the company.

Diagnostic Proj. Leader

Herts. c£14,500
If your background includes experience as an engineer and low level programming, you may be the person to lead this vitally important area for our client. With support costs figuring highly during product life the importance of effective software diagnostic aids is becoming increasingly important in maximizing profitability. We would like to hear from candidates who believe they can contribute in this area.

Software Lecturers

Bucks. to £13K + car
We are seeking experienced professional lecturers to join an established and extremely well equipped training centre which functions as an integral part of our client's support organization. It is essential to have T.P. applications experience with in-depth knowledge of data analysis. Data comms. and DBMS knowledge would be a welcome bonus. Excellent career prospects.

Energy Control Sys.

W. Country £9K-£14K
A major international company with diverse interests in many technical markets has a well established subsidiary which supplies computer controlled energy management systems worldwide. We would like to hear from programmers who have real-time experience preferably with assembler and a high level language. Usual equipment is PDP-11 with Intel 8085 and purpose built consoles etc. Variety and scope for the future.

Office Auto Prod. Manager

Hants. £18K-£20K + car
This senior position will require a broad background and knowledge of the office automation market and applications. Candidates will need to be capable of developing business plans, of evaluating products and managing support staff. We will be looking for substantial experience of W.P., text management, electronic mail and ideally, experience of the personal computing market.

Proj. Manager Banking

Herts. c£16K + car
Ideally candidates will have previous experience in banking applications or very closely related. They will have the temperament for client liaison and be technically competent in the area of transaction processing systems and communications. Our client is a highly successful U.K. subsidiary of an American company which has established itself in the rapidly growing area of Electronic Funds Transfer systems.

S/W Tech. Authors

Herts/Hants/Beds to £12,000
Previous experience as a technical author/writer is essential. Your background will probably include a period of some other aspect of computing either as a programmer or engineer. You must be capable of working with software people and providing the written descriptions of their products which make them useable by their intended customers. Your skills are widely sought by many of our clients.

UNIX Support Specialist

to £12,500 + bonus + car allowance
Our client offers you the opportunity to put your knowledge of UNIX software to special use in providing technical support to their sales force. The company is a major international computer manufacturer and offers significant long term career prospects. Your role will be to advise and assist customers with their applications to help qualify prospects and prepare technical proposals/presentations.

Open letter to
experienced computing staff
seeking new opportunities

Our free service to you is advice and assistance in identifying the most suitable new position for the development of your career. Our consultants have held a variety of responsible positions in the computer industry. With this experience and their knowledge of the job market they are available to help you. The advertised vacancies are only a representative sample of the many that are regularly registered with us by our clients. Write or call us anytime to discuss your ideas.

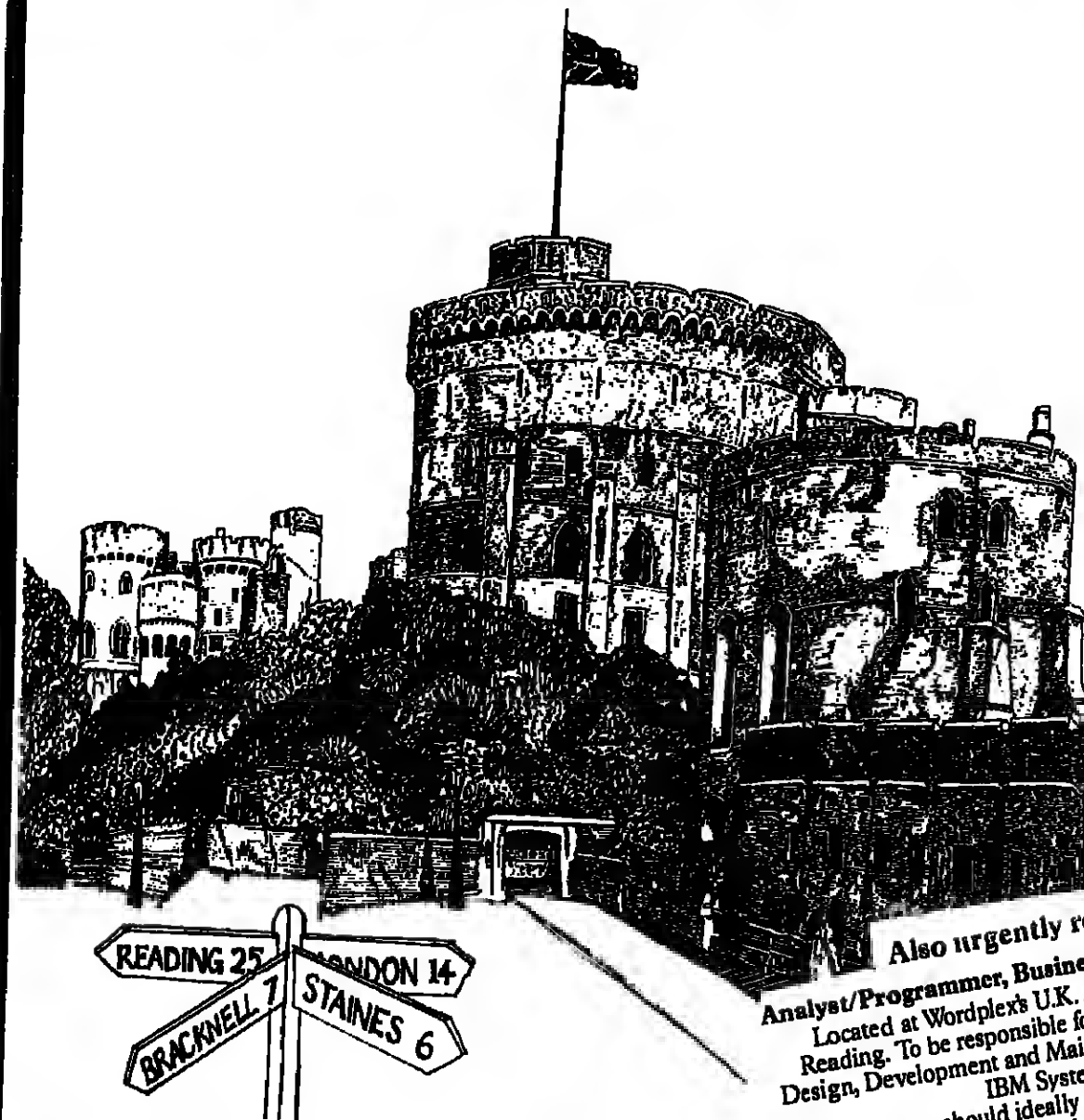
Write or telephone (02403) 28383 during office hours.
We are always ready to discuss these and many other interesting positions.

Evenings and weekends only:
Terry Harvey - Great Missenden (02406) 4705
Brian Harvey - Chesham (0494) 785722
John Barker - Chesham (0494) 783096

HR

H. R. Associates Limited
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HR



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Systems Division

Software Specialists/ Programmers

£ negotiable, plus car.

Wordplex are a leading WP/Office Automation company with products ranging from Personal Computers to large distributed office systems.

We currently require Software Specialists and Programmers for active involvement in the development/enhancement of the following:

- | | |
|--|--|
| <input type="checkbox"/> Operating Systems | <input type="checkbox"/> Word Processing |
| <input type="checkbox"/> Communications | <input type="checkbox"/> Computers |
| <input type="checkbox"/> Electronic Mail | <input type="checkbox"/> Local Area Networks |
| <input type="checkbox"/> Electronic Filing | <input type="checkbox"/> Wide Area Networks |

If you have a sound assembler background, or experience of a block structured language (e.g. Pascal), and feel you could make a useful contribution in one or more of the above areas, we would like to talk to you.

Also urgently required!
Analyst/Programmer, Business Systems £10K neg.
Located at Wordplex's U.K. Management H.Q. in Reading. To be responsible for all aspects of System Design, Development and Maintenance on our in-house IBM System 34.

Applicants should ideally have two years' RGP 2 experience and a thorough knowledge of maapics. Full training will be available on datapoint and wordplex equipment.

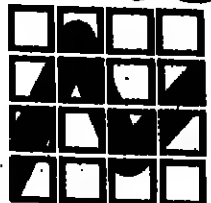
Please write with curriculum vitae or telephone George Shaw on 01-549 9236 (24 hour answering service) for an application form.

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Software Engineer to £14.5K

Responsible for fine tuning existing systems, linking of company's PDP70's and evaluating new hardware. Detailed experience and knowledge of RSTS/E, communications and RSX essential. Reports to Systems Manager.

Business Analyst to £12.5K

Reporting to Management Services Manager, the company is looking for an intelligent individual to undertake studies and projects concerning the whole range of business decision making. This is an opportunity to apply an enquiring and analytical mind to a complex area. The ability to communicate clearly both orally and on paper at all levels is essential. 4 years O and M experience is required in an engineering environment.

Analyst Programmer to £11.5K

Candidates should have a minimum of 2 years' experience of Basic + under RSTS/E preferably with a knowledge of production systems. Duties include system generation for production control system in France and order processing system in U.K., maintenance, package installation and training junior staff. Reports to Systems Manager.

Excellent prospects for even greater management responsibility exist both within the company and its diversified publicly quoted group.

To apply please telephone George Shaw on 01-549 9236, (24 hour answering service).

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Systems Software Administrator

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We have been retained by a progressive international organisation to identify a Senior Computer professional for a challenging, newly created position in the company's Technical Services area.

Our client's aim in creating the position is to bring together the Operational Support and Systems Programming Departments under the management of the new appointee, in order to provide a more co-ordinated approach to Operating Systems Management, Resource Management and Future Capacity Planning.

Naturally, the position requires a high degree of management ability and experience, ideally gained in a technical or systems programming environment, although this is not essential. Exposure to the latest IBM mainframe software would also be a distinct advantage.

This is a key position within this rapidly expanding and profitable company and the conditions of service and salary will reflect the importance the group places upon the appointment. These include a mortgage subsidy, free BUPA, free life insurance and an interest free season ticket loan.

For further information apply, in confidence, to our London office quoting reference A1/O103/CW

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TP Specialist Europe

amda
MVS, SNA, VTAM, X2E



For Amdahl, what comes next is probably the most exciting phase since our company was formed. As sales approach the billion dollar mark we are set to expand our TP products to provide a new dimension in communications technology.

Correspondingly we are seeking TP Specialists to spearhead the vital tasks of customer support, internal consultancy and new product introduction.

For you the question could be how to stay at the edge of communications development, expand your horizons into Europe or maximise your earnings. Amdahl can offer all three so, whatever you do next, check our requirements.

If you qualify, you could become part of a team recognised for providing the best support in the industry.

TP SPECIALIST

Have you reached the stage where you consider yourself a TP Specialist? Someone with the experience to diagnose and resolve network problems? Can you provide technical assistance and guidance to colleagues - and management? Are you ready to take these skills into a new and challenging environment?

If so here is an opportunity not to be missed...

The European TP Specialist will be responsible for supporting customers utilising Amdahl's advanced 4705, a superbly designed communications processor which forms the foundation for a fully integrated network.

You should have sound hardware experience of 370, 3705 or equivalent, modems and 3270 products and be familiar with PTT's and 360 channel protocol. A good understanding of SNA, VTAM and NCP is essential, perhaps preceded by experience of MVS as a systems programmer or from practical debugging.

Mature and professional, you should have the ability to convey your ideas and concepts effectively, both to colleagues and customers.

These positions are based in West London, at the Amdahl Europe Support Centre. Regular travel to Europe and occasionally the Middle East and South Africa will be required.

To apply, contact our consultant, Francesca Drinkwater or write for an application form using the coupon below.

NAME _____

ADDRESS _____

HOME TEL: _____ (7842)

WORK TEL: _____

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SERVICES LIMITED
FREEPOST, LONDON W5 2BR
TEL: 01-587 5501 (24 hour answering)

HIGH-TECH DEVELOPMENTS

To provide efficient and cost effective services in a community as large as the London Borough of Camden calls for an increasing use of complex computer systems technology. In fact, our installation is one of ICL's prime reference sites and later this year we're taking delivery of a brand new super dual 16Mb ICL 2988 to replace an existing 8Mb ICL 2966 and enhance an already extensive installation.

This includes an ICL 4Mb 2956 running under DME/VME, an ME 29 running under TME, plus a network of over 140 DRS terminals providing RJE and interactive services throughout the Borough.

Join us at Camden and you can expect involvement in a far wider range of applications than you'd find in any single commercial establishment - applications concerned with financial control and accounting, housing management, personnel, buildings and works, and all the varied social services.

SYSTEMS & PROGRAMMING SPECIALISTS

By the way, did you see the jobs featured in our advertisement on 16th February?

DEVELOPMENT MANAGER

£15,225 - £17,544 (Ref: C7/WB)

Responsible to the Head of Computer Services for leading and co-ordinating the work of project teams developing a comprehensive range of systems. Must have at least 12 years' experience - including management of systems development in a large organisation - and be capable of contributing to the long term expansion of the Unit.

SENIOR SYSTEMS ANALYST

£11,730 - £13,929 (Ref: C8/WB)

To lead or participate in small teams working on the development and implementation of specialist projects. Senior positions call for at least 5 years' experience, of which two should have been on a large system. Analysts should have at least three years' experience, including some programming.

LEADING PROGRAMMER

£11,730 - £13,929 (Ref: C10/WB)

To lead and supervise programming staff within a given development area and take responsibility for technical aspects of their work. Must have at least 5 years' experience (including supervision of programmers) and a sound knowledge of COBOL and SCL under VME/B.

PROGRAMMERS

£9,345 - £10,851 (Ref: C11/WB)

To assist with the development of specialist applications. Must have at least 2 years

COBOL experience. A knowledge of SCL under VME/B would be an advantage.

If you're flexible in your attitudes and willing to get involved, we can promise you extremely rewarding career prospects and the chance to enhance your personal and professional skills through challenging and demanding projects, plus a comprehensive training programme.

We're centrally placed, close to Kings Cross and Euston Stations, with a pleasant working environment. In addition to salaries in the ranges indicated, which include London Weighting, our benefits include generous holidays, pension scheme, interest-free season ticket loans, subsidised restaurant and assistance with relocation expenses where appropriate.

For immediate action and a detailed information package, write quoting the appropriate reference number to:

Departmental Staffing Officer, Room 207, Town Hall, Euston Road, London NW1 2RY; or telephone our 24-hour Ansafone on 01-837 9988, quoting the appropriate reference number. Closing date for completed applications: 19th March 1984.

Camden is an equal opportunity employer. Applicants are considered on the basis of their suitability for the post regardless of sex, racial origin, marital status, disablement or age. All posts are open for job-sharing.



CAMDEN
equal opportunity employer

(0378)

Computing with the human touch.

Systems Analyst

Business Technology

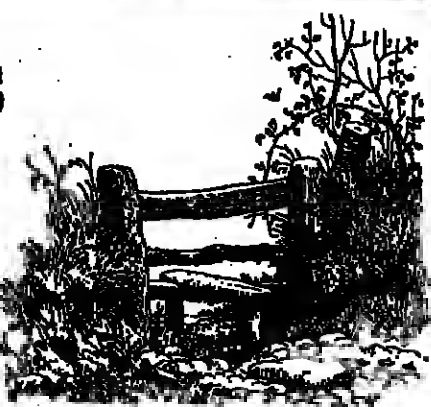
Circa £10,000 + Relocation

The Client

Is a highly successful and profitable company operating in the forefront of technology. Located in an attractive part of Cheshire, it is well served with motorway, road and rail links.

The Position

Is within a small Business Technology section working in the field of office systems encompassing such areas as information storage and retrieval, text processing, personnel computing and the associated equipment and software.



Cheshire

The Candidate

Ideally will be a graduate with at least two years' systems analysis experience. It would be particularly beneficial for candidates to have had specific experience of one or more of the areas outlined above. Good communication skills and the ability to operate independently or as part of a project team are essential personal characteristics.

For further details please ring Tony Roberts on 0270 827208 during the day or 0270 824088 evenings and weekends. Or write to him at the address below.

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You will be working in a small Data Administration group that supports development project teams, providing expertise on Data Analysis and Database Design and subsequently performance monitoring and tuning. The main database software is IMS/DB with CICS under MVS.

Probably in your mid 20's you will have had 2/3 years experience in either a database support group or in programming with DL/1 based applications. Salary is negotiable according to experience and will be accompanied by a generous benefits package which includes Non Contributory Pension, Group BUPA scheme, subsidised restaurant, and after a qualifying period season ticket, loan and mortgage facilities.

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Reply to: Cathy Jones, Company Secretary,
BIT Business Information Techniques Limited,
University of York, 125 Railway Terrace, York YO1 7DD.
Knowledge Engineers/Expert Systems/Management Consultants
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Computer Exploration Services Ltd

Technical Author/Programmer

Computer Exploration Services is a member of the Petroconsultants Group - the largest organisation gathering and disseminating information on worldwide energy exploration and production, with a strong emphasis on computer mapping.

We are seeking a Group Technical Author whose primary functions will be:
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Secondary functions will include:

User training and support (internal and external)
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The position is Cambridge-based with occasional travel to Dublin and Geneva.

ESSENTIAL prerequisites for this position are:

3 years FORTRAN in a scientific environment, using computer graphics
2 additional years as technical author

SALARY is negotiable.

Please submit applications, enclosing full c.v., to:

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Bunleigh House
13 Newmarket Road
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Or contact Gerard Hurrell on Cambridge (0223) 318633 (0371)

BUSINESS ANALYST SYSTEMS ANALYST PROGRAMMER

A large subsidiary company of a leading international engineering group is creating an in-house Systems Department to support a major investment in technology.

Main computer systems, real-time and batch are processed remotely on IBM equipment. On site mini and micro-computers will be used increasingly.

Current and future areas of systems development covering the whole range of the company's activities. Include COPICS manufacturing systems, CAD/CAM, Office automation and Financial projects.

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These positions offer competitive salaries, contributory pension scheme, etc.

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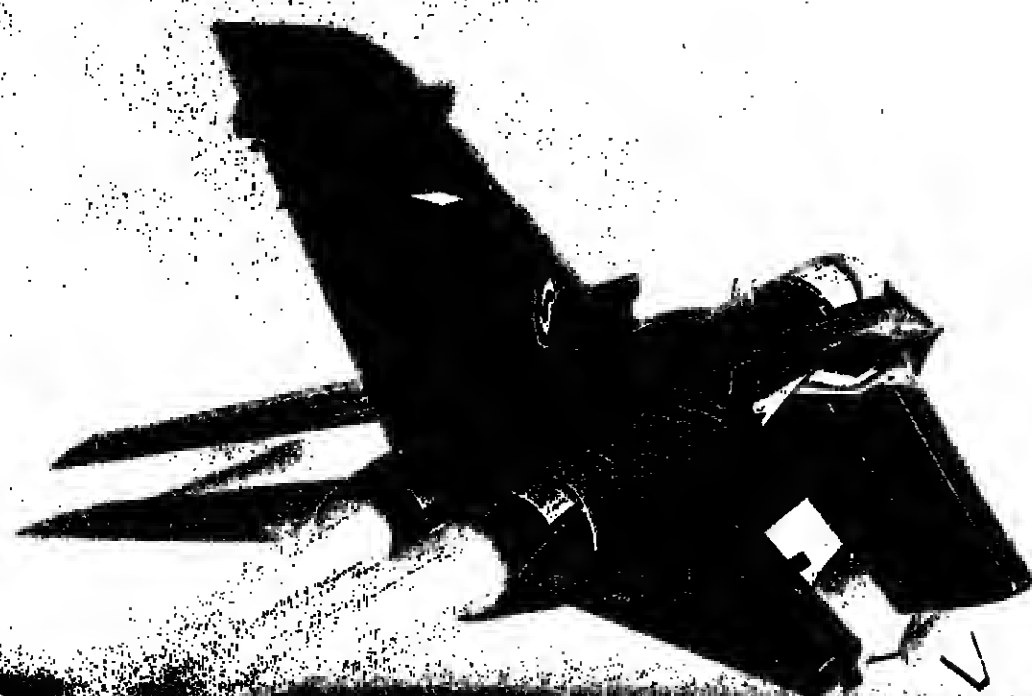
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For further information ring Chris Bond or Kirk Blackmore on 01-637 9611

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With a background of Perkin Elmer using Reliance, Fortran/Cobol, you will be designing, developing and programming exciting new projects whilst enhancing existing systems. At least two years experience and commercial awareness will make you an ideal candidate.

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The Company's activities centre around prestigious premises in Redditch, Worcestershire, which include a large and impressive Resource, the Communications and Data Centre (CDC).

The CDC is a modern, purpose-built unit housing an IBM 3033 (16 mb), an Amdahl 5860, twin IBM 3083's (16 + 24 mb) which forms the hub of a highly sophisticated network incorporating a dedicated private microwave network. Extensive use is made of DEC equipment ranging from the 20/20 mainframe through to a large number of VAX and PDP 11 Series minis to the LSI 2 range of micros. In addition, a wide range of other hardware is used including CMC, Data General and Wang, together with a variety of microcomputers.

The network supports a range of high technology products and services with their own dedicated microcomputers including Viewshare, Comet, Cosmic and ARTEMIS.

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For this position, you should have gained considerable experience of DEC hardware and software and be fully conversant with the latest products on offer from this Manufacturer. Experience of interfacing DEC hardware to IBM mainframes within a large network would be seen as a distinct advantage. Initial responsibilities will be for the expansion of a Video Tex system upgrading from PDP to VAX hardware, combined with the development of a distributed dealer network.

IBM/DEC MICROS

For this position, you should have considerable experience of personal computers which should ideally include the IBM and DEC range of equipment. Initial responsibilities will include establishing the IBM PC as a front end device within their Communications Network, development of the DEC Rainbow product and colour graphics.

The above positions require practical experience of interfacing minis and micros to large scale IBM mainframe installations where knowledge of the various communications protocols and CCITT are highly desirable. The positions will involve Client contact, examining the Client's current and planned configurations and proposing methods of creating interfaces between such configurations and the central Istel computing resource. You should be able to work with the minimum of supervision and able to produce lucid reports, budgets and cost justifications.

Both of these positions are integral in Istel's on going strategy of expansion and offer a high degree of variety of challenge. Terms and conditions of employment are excellent including a low cost lease car, bonus system and 25 days holiday, together with an attractive relocation package where applicable. For further information please contact Istel's Recruitment Adviser, David Wade on 021-236 3781 (24 hour answering service) or 0785 660051 (Evenings and Weekends) or alternatively write to him with brief career details at the SCR Birmingham address enclosing a daytime telephone number where you may be contacted with the utmost discretion.

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Manchester M2 1JY
061 833 0427

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But Programming at Hambro Life is also different because the company is different. Not content with its position as the country's largest unit-linked life company, and one of the top 50 companies in the U.K., it is now embarking on a programme of diversification and expansion that offers growth opportunities for everyone. In 1983, we joined with several other leading companies in the financial sector to form **Allied Hambro** - which is just about the most revolutionary concept in personal financial services today (providing a working environment of unmatched diversity and opportunity).

All this activity means that we need more high-quality programmers to join our young professional team. IBM PL/1 experience isn't essential - because we frequently re-train COBOL users. What you will need, however, is solid application programming experience, a

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Your starting salary will naturally depend on your experience, ability and potential. In addition, our first-class benefits package includes non-contributory pension, profit-sharing and share option schemes, free life cover, BUPA and generous assistance with moving to this attractive part of the country.

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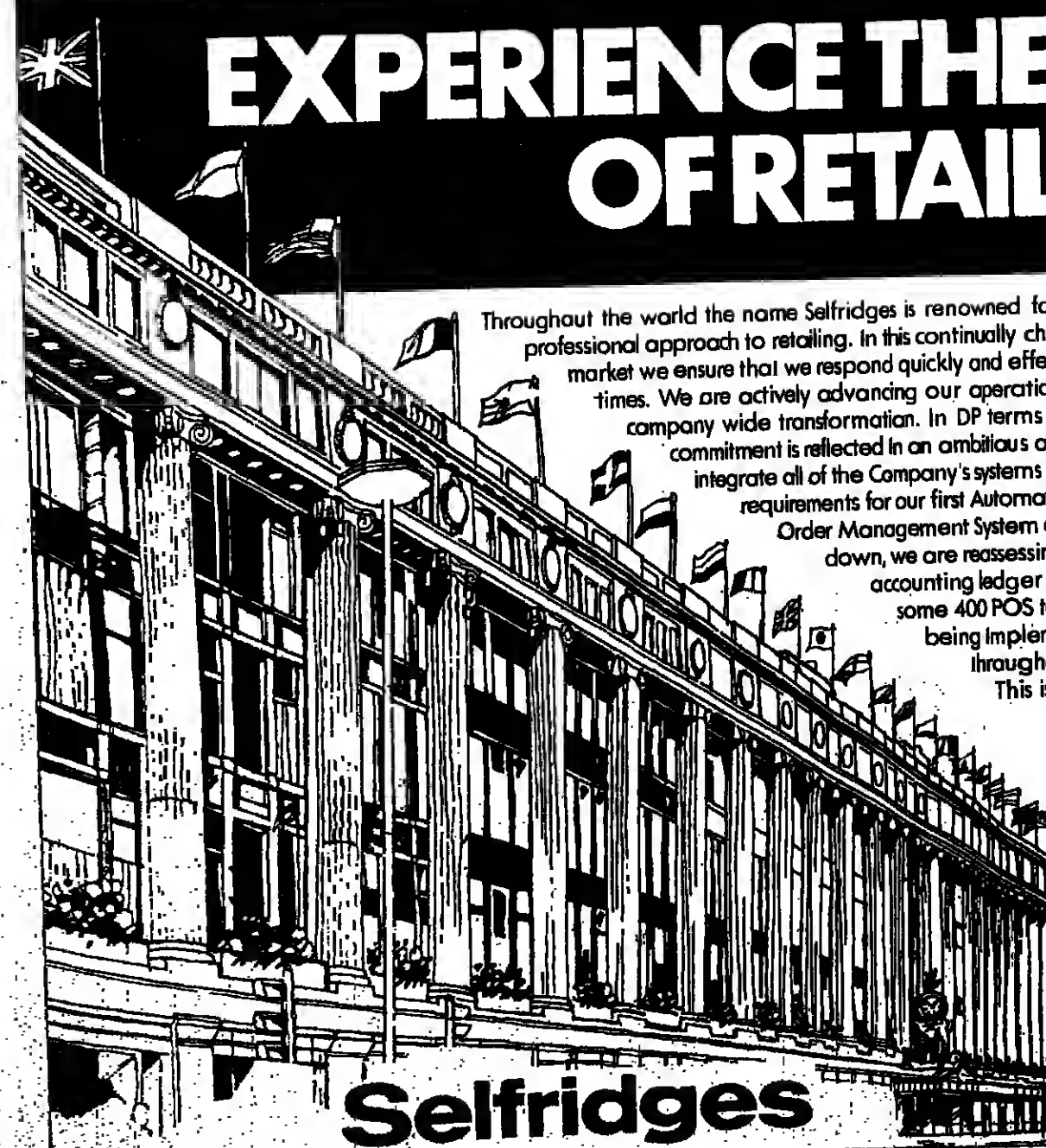
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To ensure that these exciting developments succeed we want to further expand our Management Services Team - with Analysts who are as progressive as we are. Specifically we want professionals who have a background in either DP or business systems, at least three years analysis experience and who have a strong track record in either of the following areas:-

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You may already be working in a retailing environment, but we are certain that it won't equal our scope or opportunity. Salaries of c£12,000 await those who can meet our demands and the prospects and benefits are excellent including a valuable discount scheme.

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Computer Technology Recruitment Limited
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CTR
(10130)

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The Systems Consultant will advise and support clients in the design, development and use of hardware and software for new computer-based applications. Current projects range from networked PC's to image processing systems, and cover a variety of applications including medical systems and air traffic control. Applicants must have wide experience - including the design of computer systems - and involvement with one major project throughout its life cycle. Ideally, applicants will have held a senior position for five years, and have a proven record for managing both hardware and software activities. A good lecturing/teaching style would be an advantage.

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At least two Applications Programmers are required to work on HIS MULTIBOX systems. The software is being written in Ada, and includes a range of statistical and scientific packages, and the integration of a records and data analysis system using data base software on personal computers. Applicants will have a minimum of three years experience in the design and development of software. A proven ability to work with large software systems and PASCAL in a host system environment, is essential. An understanding of dBase II applications is an advantage, and knowledge of Ada is desirable (but not essential as training will be provided).

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A Technical Author is required to prepare customer manuals and technical documents for both hardware and software. The position is well supported with expert technical assistance, word processors, and document production facilities. Candidates must have at least two years' experience with a computer manufacturer or technical user, and should demonstrate a good technical appreciation of microcomputer systems and minicomputers. Most importantly, applicants must show an ability to convert technical material into product manuals.

Please send a C.V. and details of your experience to MARK IRENS quoting reference CW0103/1.



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These positions are rarely advertised since, after a decade of recruitment experience in the industry, we are quickly able to identify the correct environment in which to search and the right people with whom to talk.

We may well have already talked to you, but if not, we would welcome an opportunity to discuss our current assignments, particularly in the 32 bit and distributed data processing environments. Please telephone BOB BOWER in the first instance for a brief and informal discussion. You have nothing to lose and everything to gain.

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Benefits include a high basic salary, initial guarantee to £20,000 plus and realistically achievable earnings of circa £30,000.

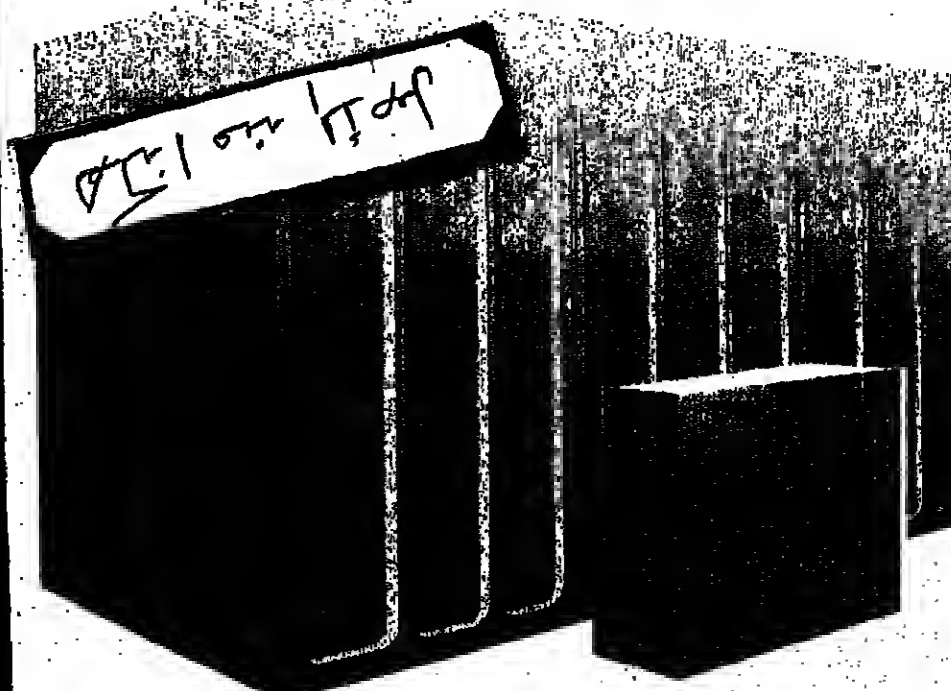
Telephone our consultants today, in total confidence, on 061-833 0846 during business hours, for more information and to arrange a local interview. Weekends and after business hours until 9.00 p.m., telephone Jeff Walton on 061-962 0002 or Roy Torres on Halifax (0422) 823153. Applications are invited from either sex.

INTERFACE
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- Answer

Whether you are an engineer with one or two years' experience of micro/micros and hard disc or a seasoned individual with several years' experience, all your ambitions are catered for by our client. A major manufacturer, their product range includes micro, 32 bit minis, communication and software products. The company is of the highest reputation, constantly expanding. Salaries and benefits are within the industry's top 10%, reviews regular and meaningful. The technology is unsurpassed; training comprehensive and on-going. Excellent career prospects are available towards Support and Management. Whether you believe that the time is right, or perhaps even not, for your next career move, ring us now to discuss the best opportunity available in computer engineering.

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MANAGEMENT & EXECUTIVE SELECTION

Engineering Liaison Officer

A vacancy has arisen at British Aerospace Dynamics Group, Stevenage Division, for an Engineering Liaison Officer.

The successful candidate will possess knowledge of engineering software packages and the ability to evaluate current packages in relation to the Company's requirements, and have the supervisory skills to manage a small team of programmers who will support and advise the computer users in the Engineering areas. Candidates, over 25 years of age, should have experience of data processing hardware and software, knowledge of IBM computers and possess the necessary motivation to succeed in a senior position. A degree (or equivalent) in Engineering, Physics or related fields will be required supported by experience of working in an engineering environment.

We can offer competitive salaries commensurate with the level of appointment together with excellent conditions of service. A generous relocation package is available, where appropriate, to selected candidates.

If you are interested in the above vacancy, please write or telephone for an application form to:-

Martin Burgess (Ref: C539), Personnel & Training Department, British Aerospace P.L.C., Dynamics Group, P.O. Box 19, Six Hills Way, Stevenage, Herts. SG1 2DA.
Tel: Stevenage (0438) 312422 Ext. 2040
(Out of office hours Stevenage 312878).

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Along with your staff you will be responsible for the development and presentation of training programmes for a variety of personnel associated with large project sales, ranging from Programmers through to Data Processing managers.

Applicants should have a programming/systems analysis background and have the ability to present courses to customers who have a variety of technical backgrounds. Experience of banking or financial institutions would be a distinct advantage and experience of lecturing/training would be useful though not critical. Product training will be provided overseas.

We offer an attractive salary and a benefits package which reflect the importance of this appointment. We have a particularly generous relocation package.

Please apply in writing to: Mr Henk Riethoff, Senior Personnel Officer, Philips Business Systems, Elektra House, Bergholt Road, Colchester, Essex, CO4 5BE, or telephone him for an application form (0206) 575115.



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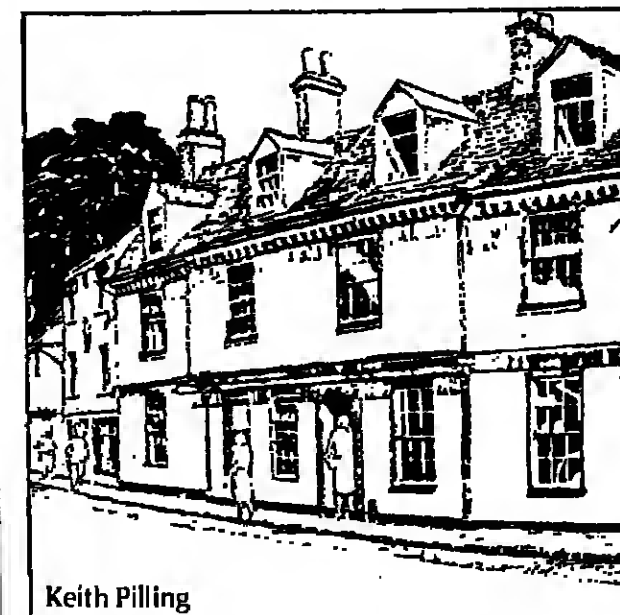
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Implementation of graphics features
ARTEMIS programming

Salary Range £8,000 - £14,000



A special environment

Over 30% of those 400 employees are based at Ipswich in our Research & Development Department - into which we consistently channel a high proportion of our profits to ensure continued improvement and development, and to develop new products, using a wide range of technology.



Keith Pilling

We deliberately chose Ipswich as a location, and this has proved very successful. Our offices are historical buildings, carefully restored, and inside you'll find a specially created environment for our R&D teams. You'll find an atmosphere of enthusiasm and encouragement, together with a dynamic sense of purpose - there's always a deadline to meet! Plus the knowledge that you are working towards definite goals and that the Company's future depends on you.

We like people to take responsibility for their work; to take pride in it; to develop and grow. If you have potential to progress upwards, we'll encourage you. If your interests develop in other areas, we'll encourage that too.

Our ARTEMIS products have traditionally been based on the HP1000 computer. As part of our continuous development they are now being implemented on a wide variety of computers from micros to mainframes. This calls for a large staff of multi-skilled specialists.

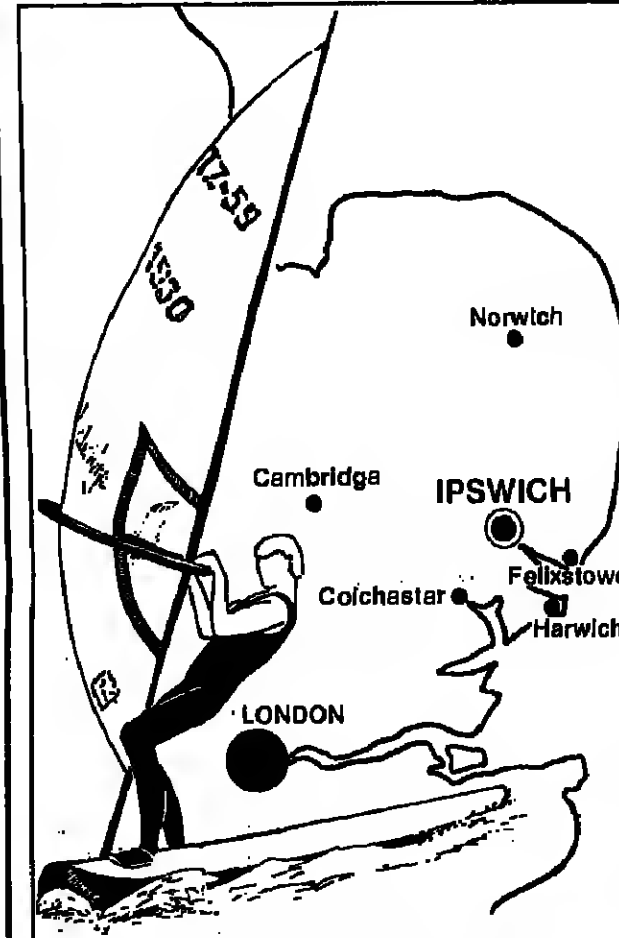


Housing is good value for money - be it old world cottage or brand new semi; rented or owned; with a choice of town or country with easy access to work.

If you have children, you'll like to know that the Ipswich area provides a full range of good State, private and special schools, as well as opportunities for further education.

You can shop at a leisurely pace, away from hustle and bustle in the traffic free areas, with time to enjoy the very wide choice of major chain stores, supermarkets, fashionable boutiques and exclusive specialist shops.

There are sports centres, swimming baths, golf, speedway, athletics tracks and football. There are regular concerts, several cinemas and a modern rep theatre. There is sailing, water-skiing and windsurfing (very popular with the more active members of R&D). Less active pursuits include fishing, river cruises and simply lazing on the beach.



Living in Ipswich

Ipswich, although an ancient town, is also a developing port and thriving commercial centre. You'll find picturesque old buildings in places like Butter Market and Silent Street, blending with some fine modern architecture. The surrounding countryside is still as attractive as when Constable painted it.

In addition to generous financial assistance, we provide temporary accommodation until you find your feet. Prior to that, of course, you will have spent some time in the area, discovering for yourself the quality of life you can expect.

You'll be actively encouraged to join the Company Sports & Social Club to help make new friends and discover the available amenities. The Club arranges many events ranging from opera to cricket matches, and is well supported.

All positions carry free family BUPA, relocation assistance, free life assurance, pension scheme, permanent health insurance, 4 weeks holiday and regular salary reviews.

What to do next

We've told you what we offer. If you like the idea of working in a secure but challenging environment enhanced by an excellent lifestyle, we'd like to hear from you.

Put your CV in the post. If we like it, we'll invite you to come and meet us and see for yourself.

Norman Sanders, Metier Management Systems Ltd., 15-17 Fore Street, Ipswich, Suffolk.
Telephone: (0473) 219661.
Please quote ref: CW1.

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PERSONAL SERVICE GUARANTEED (7810)

Sell The Williams Lea System

Technical Sales Financial Markets

The Company Williams Lea & Company is a major specialist printer of corporate financial documents, annual reports and other material for the City and International financial community. Recognised as an innovative market leader, the Company has made a substantial investment in a specially designed computer typesetting installation, The Williams Lea System.

The Opportunity Further investment in new equipment and related software is now enabling customers to provide typesetting input direct to the system via disk, magnetic tape or telecommunications. To assist in the development of this service the Company now wishes to recruit an experienced technical sales executive who will be required to sell computer typesetting and its associated print by identifying customer needs and satisfying them using a variety of technical resources.

The Person Applicants, aged 25-35, must have successful direct selling experience and a thorough knowledge of computer typesetting. Also essential are initiative, the ability to analyse customer needs fully and the personality to sell solutions at senior levels within the financial community. An understanding of computer systems would be advantageous.

Salary for this exciting new position will be negotiable but as part of a profitable and progressive group, Williams Lea offers excellent conditions of employment which will, of course, include a company car.

Please write with full career details to Jack Mansell, Williams Lea & Company Limited, Clifton House, Worship Street, London EC2A 2EJ.

a member of the Williams Lea Group (0773)

EXCITING OPPORTUNITIES IN THE MIDDLE EAST

JERAISY COMPUTER SERVICES

The largest international Wang distributor have the following vacancies in the Kingdom of Saudi Arabia to continue and develop a rapidly expanding market:

1. Branch Manager

2. Computer Sales Manager

3. Sales Executives

4. Marketing Support/ System Analysis Executives

Preference will be given to those applicants having Wang experience.

A knowledge of Arabic would be a distinct advantage.

A highly attractive tax-free remuneration package commensurate with experience will be offered, in addition to sales commission.

Interview will take place in London March 11th - 13th.

Send applications and CVs in writing to the first instance, to: JERAISS, P.O. Box 1, Littleton House, Littleton Road, Ashford, Middlesex TW15 1UL.

(06361)

THE UNIVERSITY OF LANCASTER

Department of Computing

Systems and Applications Programmers

In the first stage of a major expansion of the University's Computing Service, four new programming posts have been created. Three of these posts will be permanent and the other for a period of five years. The primary responsibilities associated with the posts are support and development of the following areas:

Post 1: VME System on the ICL 2960

Post 2: VME System on the Digital VAX 11/780

Post 3: System on the Digital VAX 11/780

Post 4: System on the Digital VAX 11/780

Post 5: System on the Digital VAX 11/780

Post 6: System on the Digital VAX 11/780

Post 7: System on the Digital VAX 11/780

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Post 11: System on the Digital VAX 11/780

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Post 30: System on the Digital VAX 11/780

Post 31: System on the Digital VAX 11/780

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Post 36: System on the Digital VAX 11/780

Post 37: System on the Digital VAX 11/780

Post 38: System on the Digital VAX 11/780

Post 39: System on the Digital VAX 11/780

Post 40: System on the Digital VAX 11/780

Software Opportunities Telemetry & Telecommunications

Dynamic Logic Ltd. is a well-established British company specialising in telemetry and telecommunications equipment with products ranging from relay control to microprocessor and microcomputer based systems. Due to continuing expansion the company currently has a variety of software opportunities in its Systems and IT & D departments.

Systems Engineers

— should have experience of designing real-time packages on microcomputers using Basic or Pascal and will be involved in all aspects of projects from initial specification to final test.

R & D Engineers

— should have experience in assembler programming in a real-time environment and will be involved in original design work developing future standard products.

These new appointments offer a first class opportunity to join a successful and growing company with excellent prospects for career progression.

Competitive salaries and benefits package are offered including assistance with relocation where required.

Telephone or write with CV to May Millward, PER, 20 The Bulls Centre, Reading, RG1 7QB. (0734) 995666.

Dynamic Logic Ltd.

PER Executive Selection

(06361)

CAD/CAM PEOPLE

Now is the time to move to an employer who, as a major supplier, is really in the forefront of this exciting technology. The company we represent recognises that its future is dependent on putting together high calibre, specialist groups, setting ambitious targets and beating the competition. They have an immediate requirement for the following:-

Software Development Engineers

Develop packages for both stand-alone CAD systems and as part of fully integrated computer installations.

Systems Development Engineers

Develop complete systems or help integrate CAD/CAM applications within business computer installations.

Sales Support Engineers

Interpret the customer's needs and provide technical assistance throughout the sales and installation process.

My client is looking for solid CAD/CAM experience on top of an engineering degree or similar qualifications. They are involved in the full range of engineering disciplines therefore your specific experience may well be relevant. They particularly want to meet Electronics Engineers with CAD experience.

Salaries will be negotiated to attract the best candidates and the other benefits are extremely attractive.

Please call or write to me, Philip Rich, All enquiries will be treated in strictest confidence.

Philip Rich, Clark Rich Associates Limited, 31 Peasgood Street, Windsor, Berkshire SL4 1BA.

Tel: (07535) 51212

Clark Rich Associates Limited

Personnel Consultants

(0773)

ENGINEERING GRAPHICS - SALES -

Can you sell what is possibly the most powerful graphics engineering system to clients who want to innovate?

There is now an opportunity to join a new high technology company capitalising on expertise in advanced drawing-based information systems developed in a leading UK Engineering Group.

This is a challenging role to provide the marketing and sales drive into an emerging field of computing activity.

You will be a graduate with a proven record in computer application sales.

A competitive employment package will be offered including a company car and relocation expenses, if necessary.

Write giving brief details to: The M.D. Conder Technology, Kingsworthy Court, Kings Worthy, Winchester, Hants.

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SYSTEMS PROGRAMMER

up to £15,000+BUPA benefits

The world's No. 1 vehicle rental and leasing company provides a dynamic environment for self-motivated people who can bring us technical skills and commitment.

At Hertz Europe's purpose designed DP centre in Hounslow, our Management Systems and Services Group is engaged in the design and implementation of major new projects using CICS and IDMS centred on an IBM 4341 - including a CICS network which will extend throughout Europe.

With us you'd take specific responsibility for CICS and the TP environment - as well as undertaking general systems programming duties.

To make the significant contribution we're looking for, you'll need at least two years' experience providing CICS technical support in a MVS or OS/VSI environment. In addition to Assembler you'll also display a knowledge of one of the following:

VSAM, VTAM, COBOL, ROSCOE, PAN VALET, IDMS.

The office is located in the centre of Hounslow, close to a good shopping area, and is easily accessible by road (M3, M4, M25), rail and tube.

For more details and an application form, please telephone Derek Harris on 01-570 8515. Or write him at: Hertz Europe Limited, 34/62 Staines Road, Hounslow, Middlesex TW3 3JS



The sign of a No.1 Job

★ RPG II/III VACANCIES ★

RPG II or III MIDD'X
Middlesex based multi-national company is seeking an analyst/programmer with 2 years' RPG II or III experience to join a dynamic team of 7 in a dynamic atmosphere.
JUNIOR PROGRAMMER WEST LONDON
At least 12 months' solid commercial experience required on IBM System 34/RPG II. Work in a development and maintenance group and extend your analysis and technical skills.
SOFTWARE HOUSE S.W. LONDON
My client is based on the Middlesex/Surrey borders and seeks a Senior Analyst/Programmer to fill a consultancy role. You will be liaising directly with clients, establishing business needs, writing system proposals and controlling projects. A solid System 34 background is essential.
SYSTEM 34 ANALYST/PROGRAMMER
Minimum of 2 years' RPG II experience with a financial background preferred. Development of on-line commercial and accounting systems. City area.
RPG III PROGRAMMERS CITY
Small close-knit team requires a graduate calibre programmer with 18 months' RPG III and a financial or banking background. Comprehensive training program.
SENIOR PROGRAMMER
Senior RPG II or III Programmer to join leading city software house. Make your experience work for you and gain analysis expertise.
RPG III PROGRAMMER HERTS
A minimum of 12 months' RPG III experience although training can be provided to a solid RPG II Programmer. Lots of development work. Fixed-time.
SYSTEM 34/36/38
I need programmers and analysts/programmers in Bork, Bucks, Middlesex, and central London. If you can offer at least 18 months' RPG II or RPG III gained on IBM Kit, and are keen, ambitious and ready for a challenge please contact me to discuss your career further.
ANALYST/PROGRAMMER CITY
Minimum of 18 months' RPG III/System 38 experience for financial organisation. Full management training and excellent benefits package.
2 PROGRAMMERS CITY
Small city bureau, rapidly expanding with clients in the financial sector. Programmers with 6 months' IBM System 38/RPG II experience, are offered above average salaries and travel expenses.
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To work for a small department developing new commercial systems on the IBM System 34 in RPG II. Good user liaison and analytical abilities required. Company car.
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Dutch-owned company with offices all over the U.K. seeks a junior IBM System 34 programmer with very basic skills in RPG II. Full training provided.
Contact Glenda, Carol or Carolyn for details of these and many other exciting opportunities.
Engledown Computer Personnel Consultants, Brushfield House, 12 Brushfield Street, Bishopsgate, London E1 6AN.
TELEPHONE: 01-247 3356 (24 hours).



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AN UNUSUAL TWIST TO YOUR CAREER DEVELOPMENT

In the world of aviation and defence systems, few companies can match the pioneering achievements of our client. One of the founders of aeronautics in Britain, the company has influenced major aviation advances ever since.

Not surprisingly, their R&D activities are at the threshold of technology, highly classified and very exciting. It is for this rarified environment that we have been retained to recruit electronics specialists of varying experience.

There are immediate openings for:

SYSTEMS/SOFTWARE ENGINEERS Ref. CW 1808

ELECTRONICS ENGINEERS Ref. CW 1809

SYSTEMS ENGINEERS Ref. CW 1810

RESEARCH ENGINEERS Ref. CW 1811

- and we would be particularly interested in talking to those engineers who have all the necessary skills for promotion but are frustrated by "waiting in line" for an opportunity. To them, our client can offer outstanding prospects for rapid progression.

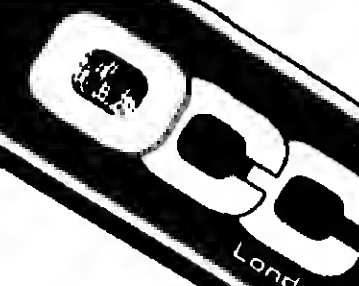
The working environment is excellent. Laboratories are fully equipped with some of the latest and most powerful computer tools. Most mainstream manufacturers' products are featured in a fully integrated installation centred on ICL 1904S/2966 accessed via intelligent terminals. Experience in any block structured language would be appropriate.

The company is based in one of the UK's lowest cost of living areas, yet educational, recreational and leisure facilities are excellent, and the area is surrounded by some of Britain's most beautiful, natural, countryside.

Comprehensive benefits include excellent pension, sickness and life assurance schemes, heavily subsidised canteen, active sports and social club, full relocation assistance and BUPA. Certain senior grades will also enjoy a car allowance.

If you want to work at the threshold of technology, the door is open. Telephone, or send your full c.v. quoting appropriate ref, to:

01-242 9356 occ computer personnel
24 hour answering service Recruitment Consultants, 1st Floor, Craven House, 121 Kingsway, London WC2B 6PA.



Senior Analyst Programmer

c £12,000

IBM System 38
New Installation
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We are the country's leading waste-management company, with regional offices and service-centres located throughout Britain. Our rapid expansion has created the need for a comprehensive MIS management programme.

The immediate aim is to install a new IBM System 38 in our headquarters in ESSEX, and then provide a networked link, using the latest IBM software, to our sites throughout the U.K.

In order for us to achieve our aim, we require a SENIOR ANALYST PROGRAMMER who has the technical ability and personality to help build a new department.

We think the ideal candidate should have considerable IBM GSD experience preferably to include S38 and RPG III and have a desire to work in a networked environment. He or she will be heavily involved in the initial systems and programming design. Subsequent phases of the project will provide the opportunity for travel between user sites. Successful candidates can expect a competitive salary and the benefits associated with a major employer.

For further information and an immediate interview contact our advising consultant SIMON KONING at

TCR

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19 Rope-maker Street London EC2Y 9AS
Monaco House Bristol Street Birmingham B5 7AS

Telephone 01-588 9871 Telex: 25851
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SYSTEMS & SOFTWARE ENGINEERS



The past year has been an important one for Marconi Underwater Systems. On the technical front a host of Software and Hardware advances have confirmed our position as world leaders in underwater technology.

Right now we are looking forward to a far more exciting year ahead and that is where the opportunity is to establish yourself within a young company involved in the design and development of the world's most technically advanced projects. Order books are full offering job security well into the future. The time to make your move to a more ambitious future is now.

Candidates with Degree/HND qualifications in Physics/Maths/Engineering/Computer Science are required for the design and evaluation of complex underwater systems. Vacancies exist in the following areas:-

Trials Planning & Assessment

Involving the detailed planning of trials necessary to support the weapon development programs and the subsequent analysis of weapon behaviour.

Mathematical Modelling

Experienced engineers are required to derive mathematical models of complex weapon systems and their environment and to design and develop both digital and real time simulations of these systems.

Performance Evaluation

Using analytical methods and computer simulations to predict the performance of complex weapon systems and evaluation of trials to assess the effects on weapon system performance.

Algorithm Development

Comprising the design of the algorithms which determine the "cleverness" of the software controlled weapons, using techniques such as pattern recognition and artificial intelligence.

Real Time Software

Engineers are required at all levels with experience in one or more of the following to develop software on DEC or GEC Computers to control weapons or real time simulators:-

MARCONI UNDERWATER SYSTEMS LTD.,
GEC Estate, 68 East Lane, North Wembley,
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Tel: 01-908 4094 during office hours.

Trials Planning & Assessment

Data Analysis Software Engineers

To develop FORTRAN software on VAX 11/780 computers to provide user friendly facilities for the analysis of simulation and trials data. Data storage facilities include a RELATIONAL database and the hardware used includes COLOUR GRAPHIC displays and hard copy PLOTTERS.

Your time and our time are important. If you are not able to contact us immediately but would like to know more about this young company with its informal friendly management style we have put together a taped message which will explain exactly why we are or the forefront of our industry. Telephone 100 for Freefone Neptune and the message.

Or better still, telephone or write to Trevor Graves today. On the other hand you may prefer to see us at our informal interview and company presentation evening at The Post House Hotel, Swindon, March 7. It's up to you to take these real opportunities and influence events, where achievement is rewarded with career progression.



Assistant Telecommunications Engineer

V.S.E.L. a subsidiary of British Shipbuilders, is a major organisation with over 12,000 employees in Barrow-In-Furness on the edge of the Lake District National Park. Due to expansion a vacancy exists in our Telecommunications Department for a recently qualified graduate with a degree in a Telecommunications related discipline. The department is responsible for the provision and operation of an efficient cost effective Telecommunications service, based on an IBM 3750 SPC switch, at the main site in Barrow-In-Furness and a Voice and Data network, leading various locations throughout the country. The successful candidate would participate in the design and development of an integrated network for voice, data, telex and facsimile. The successful candidate would be involved in the evaluation and selection of equipment from various sources and would be expected to supervise some tele installation work.

Salary would be commensurate with age and qualifications.

For an application form, male or female applicants should write to the Assistant Personnel Manager, Vickers Shipbuilding and Engineering Limited, P.O. Box 6, Barrow-In-Furness, Cumbria, LA14 1AB.

(B128)

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TANDEM INTERNATIONAL, the leading manufacturer of small disk drives, require a SUPPORT ENGINEER to work from their Reading facility.

Applicants should have practical experience with both floppy and Winchester drives including in-depth knowledge of digital magnetic recording principles. SALARY £11,000 p.a. Other benefits include company car, BUPA, holiday bonus.

PLEASE CONTACT Sharon Renew
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(116/20/2)

SYSTEMS DEVELOPMENT MANAGER IBM 34 SITE

Circa £11,000 plus Bonus

We are seeking an experienced analyst programmer with an IBM 34 background to head our computer department in developing our systems into a first-class information service. The introduction of a System 38 is currently under consideration. The ability to liaise with user departments is of vital importance and a knowledge of MAAICS would be desirable.

Applications with full c.v. to The Personnel Manager, F. Francis & Sons Ltd., 50-62 Blackheath Road, London SE10 8DH. Tel: 01-692 7181.

(P991)

Team Leader Computer Support South Africa

Gold Fields of South Africa Limited is a mining and finance house incorporated in the Republic of South Africa, with its Head Office in Johannesburg, and is listed on the Johannesburg, London, Paris and Zurich stock exchanges. Its policy is to invest in the mining and processing of metals and minerals in Southern Africa and to explore for and develop new projects in the energy, precious metal and base metal fields.

Gold Fields operates a centralised computing facility, based at Head Office, which serves all Group companies and utilises an ICL 2977 mainframe, supplemented by a network of equipment including graphics work stations for on-line engineering applications.

The Computing Facilities section now requires an experienced software specialist to head up its technical support team. The team leader will be responsible for the forward planning and effective day to day control of the technical support team, whose activities include:

- operating systems support
- system security
- machine performance monitoring and tuning
- communications network design and implementation
- hardware configuration planning
- software products, implementation and support

The ideal applicant will have:-

- a knowledge of network design, preferably ICL
- in-depth knowledge of support of large mainframe operating systems, preferably VME
- the ability to participate in the formulation of long-term plans
- the ability to set objectives within overall plans and to lead a team to meet these objectives.

The position offers an attractive salary, company car and other fringe benefits, including medical aid and pension schemes. The company will assist with relocation expenses and free transit accommodation will be provided for the first three months.

Interested applicants should write to: Mr. J. Scholes, Personnel Officer, Consolidated Gold Fields PLC, 49 Moorgate, London EC2R 6BQ.

Gold Fields

Gold Fields of South Africa Limited

Senior Systems Engineer Computer Graphics-Income Negotiable

Our client, a young and dynamic U.S. Corporation, designs, manufactures, markets and services raster graphics display processors and sub-systems used in a wide variety of interactive computer applications.

Achieving growth rates of over 40% p.a., their U.K. subsidiary located near London wishes to appoint a top performer to the Senior Systems Engineering position.

Responsible for pre sales support the right candidate will have a strong selling awareness and will make a significant contribution to the achievement of U.K. sales objectives.

He/she will most likely be a graduate with 4/5 years sound commercial applications experience and will preferably have graphics end/or CAD/CAM experience.

The Rewards This is a job for a self-motivated performer and high achiever and the income package will be negotiable and geared to attract a person of the right calibre.

A company car and employee benefits consistent with a progressive corporation will also be available.

Applications will be strictly confidential. Write now (enclosing CV) or telephone in the first instance to Pat Rafter, Managing Director at (0001) 606844 for an Application Form, Monday to Friday 8.30 am to 6.30 pm quoting reference number LX38. Automatic answering operates outside these hours.



Insight Consultants

IMPC (Ireland) Limited,
Insight House,
20, Upper Fitzwilliam Street, Dublin 2.
Telephone: (0001) 606844

(B129)

SOCIAL & COMMUNITY PLANNING RESEARCH

PROGRAMMER

SCPR, an independent social research institute requires a programmer to join a team concerned with the processing and analysis of data from a series of private research studies, and with the development of a variety of related and general applications.

The Institute has links to an external VAX computer running UNIX, but as increasing number of applications are being developed to run on in-house microcomputers.

A sound computer background, adaptability and the ability to communicate with non-computing staff at all levels are essential for the job. Experience in handling some data would be a distinct advantage.

Salary in the range £7-10,000 according to experience and qualifications. Please write or telephone to obtain further details and an application form to the Director.

35 Northampton Square, London EC1V 0AX. 01-250 1866

(B130)

SALES EXECUTIVES FOR IBM 327X TERMINAL MARKET

Computer Peripherals (Systems) Limited, the exclusive UK distributor of Telex Computer Products 327X terminals and associated equipment are seeking to significantly increase its sales force. Sales Executives currently selling to Data Processing Managers are being sought in the Home Counties both north and south of London and in the Midlands.

Telex are the leading 327X alternative to IBM in the US with an unrivalled range of high quality cost effective products.

Computer Peripherals (Systems) Limited has ambitious plans for growth in the UK in this fast moving and exciting market.

The Company sets realistic sales targets with specially structured incentive plans for new employees. £21 to £25K total earnings are readily achievable for top performers. Car is provided.

For more information please John Lowe, Sales Director, on 01-278 7887.

Computer Peripherals (Systems) Limited
343 City Road
London
EC1V 1LR

(B131)

analyst programmer

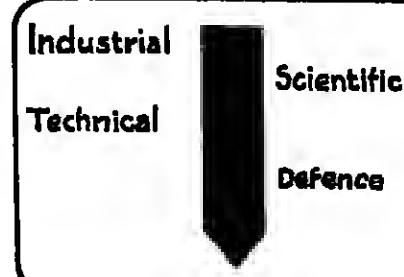
We are a long established and progressive company based in Norwich with a Printing Division of international repute as well as Publishing and Retail interests.

We would like to hear from Systems Analysts who can immediately work on both new and existing applications for our Information Processing network. Applicants should have at least two years experience, have successfully implemented at least one new system and have COBOL programming ability. Working contact with ICL, ME29 and DB20 hardware is also desirable.

We offer excellent conditions of employment, career prospects, a wide variety of interesting work and assistance with relocation. Please write with brief career details to: G. Rowe, Personnel Manager, Jarrold Printing, Whitstreters, Norwich NR3 1SH.

JARROLD
printing

(B132)



REAL TIME SPECIALISTS

£8K - £25K

London - Home Counties - U.K.

Opportunities with Users, Computer Manufacturers, Consultancies and Systems House.

For Programmers/Analysts, Software Engineers/Designers, Project Leaders/Managers, Consultants, Managers.

With a minimum of 1 year's concentrated experience in one of the following areas of application:

Communications - Data/Tape - Voice Recognition - Message/Packet switching - LANs - Protocols, Industrial Process Control - Data Acquisition - Instrumentation - Plant Monitoring, M.O.D. systems - C3 - Bates, Wevell, Plamigan, Nadge etc. - Electronic Warfare - Simulation - Radar etc. Office Automation, Information Technology, Software Tools, AI - EXPERT systems, CAD/CAM, Graphics, Image Processing, Q.A.

Using 'C', PASCAL, FORTRAN, CORAL, PLM, RTL/2, PROLOG, LISP or CHILL with an Assembly level language.

On PDP-11, VAX, Argus, SEL, HP1000, Intel, T.I., Motorola etc., with relevant operating systems. UNIX is particularly desirable.

Telephone Beryl McLaren on 01-636-9719, 24 hour service (weekends too) you'll get a personal reply, not a recorded message.

Jupiter

Computer Appointments

01-636 9719

Specialist recruitment of
Industrial, Scientific, Defence
and Technical personnel
12-13 Henrietta Street, London WC2

(B133)

Senior Programmers Programmer Salary to £11,000

Increased work resulting from our success in selling new projects, means that we require additional staff in our expanding Manchester office.

We are looking for ambitious people who already have sound experience in the programming environment and wish to develop their skills further.

A working knowledge of Hewlett-Packard computers would be an advantage, although re-training will be given to successful candidates not familiar with Hewlett-Packard. You should have a minimum of 12 months experience for these positions. Salaries, benefits and career opportunities reflect the professionalism we expect from our staff.

In the first instance, please write or telephone for an application form to Carole Graham, Hoskyns Group Limited, Springfield House, Springfield Road, Sale, Cheshire M33 1XS. Tel: 061-969 3611.

hoskyns

1984-1984

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MANCHESTER OFFICE

(B134)

THE ENGINEER

NEW
GROWTH
ENVIRONMENT

Business
Computing

PROGRAMMERS
CLOSELY
INTERFACING
WITH ALL
DEPARTMENTS

new
story

THE PROGRAMMING STORY BEHIND THE FRONT PAGE NEWS

The news is all from Morgan-Grampian plc, a major publishing house responsible for 50 important titles, many of them required reading for people concerned with the advances of high technology in business and industry.

With the installation of a large new IBM system 38 configuration at our Head Office in Woolwich by leased line to an IBM 3083 connected at Croydon, we're now ready to take on the exceptionally bright, people-orientated Programmers who will write the synopsis for our future growth - in RPG and COBOL - and do much more besides. There will be opportunities for writing systems using micros, minicomputers and mainframe in a multi-site environment.

IBM 38 experience is not a requirement - we can provide all the training you'll need to use our advanced equipment to develop - then expand - a complete range of software systems. Everything to support exciting developments.

What we want from you is a minimum of 2-3 years' good program-

ming experience and ability to liaise well with people in every area of our business from editorial chairs to finance and media sales.

Later, it could be possible for you to move out into these departments in a key interface role. So you'll need to be the kind of communicator who can bring about a clear understanding of computer systems amongst non-computing people.

If that's the sort of challenge you're equipped to take on, you can expect a starting salary up to £10K, a superb range of benefits and a lively and companionable environment - our staff club amenities include a restaurant, bar and sports facilities. We're also conveniently located close to Woolwich BR station and an excellent shopping centre.

Now for your programming story - everything you've done up to date. Send it to: Personnel Officer, Morgan-Grampian plc, 30 Calderwood Street, London, SE18 6QH. Tel: 01-855 7777.

MG

What's new
in Electronics

The sales
teams primed
with latest
circulation
figures for
50 important
publications

What's new
in Computing

A NEW IBM
SYSTEM 38
FOR
MORGAN-
GRAMPIAN

new
story

What's new
in Computing

new
story

Lotus

DEVELOPMENT CORP.

A WHOLE NEW FUTURE

Lotus Development Corporation is the world's foremost applications software development company. Founded in 1982, the company developed a revolutionary software package initially aimed at the IBM Personal Computer. Revenues in excess of \$3 million dollars are a testament to the market acceptance of the product. On February 14th 1984, the company launched a new product, Symphony, in the USA. Having dominated the US market place, Lotus are now committed to establishing a European Product Development Group. They now need to appoint the following key positions.

SOFTWARE DEVELOPMENT MANAGER c.£23K
Reporting to the International Product Development Manager, you will be responsible for recruiting and managing a team of individuals to successfully complete the intended migrations of Symphony. You will need at least five years' experience of software development, having gained a degree in Computer Science or related discipline. Experience with Intel 8086/8088 microprocessors, MS-DOS and personal computers is desirable.

PRODUCT MANAGER c.£23K
You will be responsible for liaison between Lotus International Marketing and Product Development. Your key functions will be to co-ordinate the necessary software development, documentation, testing and production of the products. The position will require project management experience co-ordinating multiple product development teams under deadline commitments. It is vital that you are well organised and are able to communicate and relate on technical and human issues.

QUALITY ASSURANCE/DEVELOPMENT SUPPORT MANAGER c.£28K
You will be responsible for staffing and managing the day-to-day activities of the QA support group in Europe. You will be responsible for the development and testing of software products. You will be responsible for the development and testing of software products. You will be responsible for the development and testing of software products.

VAX SYSTEMS MANAGER c.£23K
You will be responsible for the development and testing of software products. You will be responsible for the development and testing of software products. You will be responsible for the development and testing of software products.

Lotus Development Corporation's track record of success is unquestionable. As such, they are in the upper percentile for both technical expertise and calibre of staff. All of the positions carry a high basic salary plus company benefits including a car allowance where appropriate. For further details please telephone Tony McGrath on 01-637 9611 or send your CV to Management and Executive Selection.

ANALYST/ PROGRAMMER

HONEYWELL L6

c. £10,000 + Relocation

Our client, based on the Bucks/London borders, is part of the L.R.C. group. They have recently installed a Honeywell L6 which will shortly be upgraded to a DPS 6. They wish to appoint an Analyst/Programmer to liaise and eventually take over systems being implemented by a Software House and subsequently move into a Systems Manager role.

Applicants will probably be in a Programmer or Analyst/Programmer role with experience of Honeywell L6 Cobol and/or Screenwrite. Strong user skills are essential as there will be a considerable amount of contact with management departments. The successful candidate will also have the opportunity to work with microcomputers.

In return our client offers a good starting salary with regular reviews, 22 days' holiday, NCPs, relocation assistance where necessary and other large company benefits. If you are able to work on your own initiative and enjoy a challenge contact Mike Harmer for further details.

Apex Computer Recruitment Ltd.

404 4821

59 Grey's Inn Road
London WC1X 8TL
Tel: 01-404 4821

In the field of Office Automation, there's always room to grow Software Engineers £8,500-£15,000

Office Automation is a rapidly advancing field, offering outstanding scope for growth and development - in every sense. Our Client, an integral part of a major International Group and a breaker of new ground in its own right, is engaged in the development and enhancement of several exciting state of the art products. They now require the expertise of 18 additional Software Engineers to join their London or outlying offices. Professionals who wish to work in a flexible, young, high technology environment, will not be disappointed.

For further information, and a confidential appointment, please contact Shiyon Riordan, on 01-630 1433 (office) or 01-670 8717 (home)

JUNIOR LEVEL 2-4 years Experience - Office Automation experience not essential.
SENIOR LEVEL 4 years + Experience - Project Management experience desirable. Knowledge of at least one of the following - CORAL, PASCAL, 'C', PL/M 86, UNIX/XENIX, INTEL (8086/8088), COMMUNICATIONS, GRAPHICS, LAN. The accompanying benefit package is excellent - including one or two unusual benefits - and reflects both the company's success and its commitment to employee care. The working environment is modern and comfortable - but perhaps the most exciting reason for joining is the opportunity to work with some of the most exciting state of the art technology today.

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Computer Skills International Inc, 1 Buckminster Place,
Framingham, Massachusetts 01701, USA. Telephone: 0101 617 872 1225.

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Contracts

IBM
IBM MVS ASSEMBLER PROGRAMMERS AND
ANALYST/PROGRAMMERS
IBM 4300 DOS/VSE COBOL CICS OL/1 (URGENT)
PROGRAMMERS
IBM SY38 RPL/3 COBOL MAAPICS ANALYST/PROGRAMMERS
IBM MVS CICS SYSTEMS PROGRAMMERS
IBM 5100 OPX PROGRAMMERS
IBM 005 CICS COBOL OL/1 PROGRAMMER/ANALYSTS
IBM MVS OR OS ASSEMBLER-MACRO LEVEL CICS (URGENT 6
MTHS) PROGRAMMERS
IBM BANKING 16 MTHS-URGENT) SYSTEMS ANALYSTS
IBM 4300 MVS PL/1 ANALYST/PROGRAMMERS
IBM BUSINESS CONSULTANTS
IBM SY38 RPL/3 MAAPICS ANALYST/PROGRAMMERS

ICL
ICL VME 2800 IOMS COBOL ANALYST/PROGRAMMERS
ICL SYSTEM 25 IAS COBOL PROGRAMMER AND
ANALYST/PROGRAMMERS
ICL 2800 VME TOTAL TPS PROGRAMMERS
ICL 2800 VME COBOL IOMS TPMS PROGRAMMERS
ICL GEORGE 3 SUPPORT
ICL 2800 OME FRANCE OPERATOR
ICL VME IOMS TPMS COBOL ANALYST/PROGRAMMER AND
PROGRAMMERS
ICL VME TPMS COBOL ANALYST/PROGRAMMERS AND
PROGRAMMERS
ICL DRS 20 CICS COBOL ANALYST/PROGRAMMERS AND
PROGRAMMERS
ICL 2800 VME/IOMS TPMS ALL LEVELS

USA
PROJECT MANAGER, SENIOR ANALYST/PROGRAMMERS AND
ANALYST/PROGRAMMERS. ANY MINI EXPERIENCE WITH
MANUFACTURING, DISTRIBUTION OR INVENTORY CONTROL
APPLICATIONS.
Please contact JOAN LOVEJOY on 0442 40761

ATTENTION: NORTHERN ENGLAND
In addition to the current requirements below, our increasing
attention to the north of England means that we need
contractors with a diversity of skills to join us for work in the
area. Register with us now if you want a northern contract.
Ask for Eddie Leach on 0442 40761
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IBM MVS COBOL CICS/OL/1 (URGENT) PROGRAMMERS
IBM SY38 RPL/3 ANALYST/PROGRAMMERS
ICL VME COBOL PROGRAMMERS

ICL VME COBOL IOMS TPMS PROGRAMMERS
ICL 2800 TEXT SUPPORT
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PRIME SYSTEMS DESIGNERS
Z80/Z 8000 C PASCAL
LASSEMBLER ANALYST/PROGRAMMERS
POP 11 RSX 11M CORAL/PASCAL SOFTWARE ENGINEERS
GEC OS CORAL (URGENT) PROGRAMMERS
HONEYWELL COBOL OL/1 PROGRAMMERS
CMC PICK RPL/3M PROGRAMMERS (URGENT)
OG RDS BUS BASIC PROGRAMMERS

SCOTLAND
REALTIME MILITARY SYSTEMS SOFTWARE ENGINEERS
IBM MVS IOMS FOCUS ANALYST/PROGRAMMERS

OTHERS
DATA GENERAL AOS VS COBOL INFO PROGRAMMERS AND
ANALYST/PROGRAMMERS
DATA GENERAL AOS VS BUSINESS BASIC PROGRAMMERS
AND ANALYST/PROGRAMMERS
HP 3000 - POWER HOUSE ALL LEVELS
HP 3000 COBOL WITH STRUCTURED PROGRAMMING
ANALYST WITH DETAILED KNOWLEDGE OF UNIX AND COBOL
ALL LEVELS
HP 3000 COBOL IMAGE VIEW QUERY PROGRAMMERS
DEC POP RSX 11/M+ MACRO 11 EXPERIENCE PROGRAMMER
WITH FINANCIAL BACKGROUND
DEC POP RSTS BASIC +2 PROGRAMMERS
ANY MACHINE MANTIS VSAM PROGRAMMERS AND
ANALYST/PROGRAMMERS
HONEYWELL LVM IOMS COBOL PROGRAMMERS
CMC SOVEREIGN BASIC ANALYST/PROGRAMMER
M6800 VMS PASCAL OR ASSEMBLER
ANALYST/PROGRAMMER
M6800 ASSEMBLER ANALYST/PROGRAMMER
HP3000 COBOL ANALYST/PROGRAMMER
INTEL MASCOT PERIPHERALS SOFTWARE DESIGNER
VAX FORTRAN AND SYSTOL
ANALYST PROGRAMMERS AND PROGRAMMERS
WANG COBOL ANALYST/PROGRAMMERS AND
PROGRAMMERS
VAX FORTRAN ANALYST/PROGRAMMERS AND
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Z100 Z80 ASSEMBLER +/- RSX11/M APPLICATIONS
PROGRAMMERS
ANY MICRO HIGH LEVEL LANGUAGE ENGINEERS WITH ATE
EXPERIENCE



(0178)

MVS SYSTEMS PROGRAMMMER

*Are you Systems Software
opportunities which
combines a tough
technical challenge with a
clearly defined
Management Career path.*

**£14,500-£17,000
Package**

**SOUTHERN
HOME COUNTIES**

We are the Technical Support Group responsible for providing the facilities and technical guidance/lead for some of the most ambitious information/business systems in Europe.

Reporting to the Systems and Programming Manager, and deputising for him on occasions, you will have considerable responsibility, within a close knit team, for ensuring that optimum usage is made of our mainframes and all manufacturers and proprietary hardware and software.

As well as this day-to-day involvement, in performance monitoring and tuning, you will also have to carry out the forward thinking aspects of capacity planning.

We would therefore like to meet with experienced Systems Programmers who can combine a number of years in an MVS/CICS support role with the obvious management potential to carve out a successful career, in a substantial and highly visible professional organisation.

An attractive salary and benefits package, including generous holidays and relocation assistance, make this a great opportunity for a technically oriented forward thinking professional.

If the cap fits - call me: Nick Reid on 01 935 0671 (9.00 to 5.30pm.), or on 01 644 1973 (8.00 to 10.00pm.), evenings or weekends.

Interviews will be held at SCR Regional offices.

(0137)

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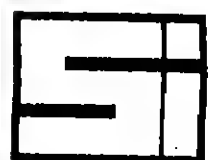
SOUTH
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London W1M 5HS
01-935 0671/486 0461

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35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-236 3761

NORTH
International House, 84 Deansgate,
Manchester M3 3EE
061-633 0421

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Boite 4, 1050 Bruxelles
010 322-640 7151/71

HOLLAND
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SMITHS INDUSTRIES

Software Engineers - Avionics Cheltenham to £12,000 p.a.

Our Client, Smiths Industries Aerospace and Defence Systems Limited, have a worldwide reputation for technical excellence combined with forceful innovation.

Due to a number of exciting new projects incorporating the application of the latest in microprocessor technology, Smiths wish to recruit a number of engineers, preferably educated to degree level in a science or engineering subject.

Opportunities exist for talented men and women to fill positions ranging up to Senior Team Leader level, requiring the ability to plan, organise and control the work of small teams.

Experience of programming for real time applications is essential. Exposure to a modern 16 bit microprocessor would be a distinct advantage.

In addition to excellent salaries, dependent on experience and abilities, the Company pay generous relocation expenses and subsistence allowances for those who need to move into the area.

To apply, please write with full curriculum vitae or telephone George Shaw on 01-549 9236 (24 hour answering service) for an application form.

Sloangate Recruitment Advertising Limited
Dominic House, 171-177 London Road, Kingston-upon-Thames,
Surrey KT2 6RA. Telephone 01-549 9236 Telex 918417 STARAD G

Sloangate
Recruitment Advertising

Sales Executives and Pre Sales Support are you WORKING FOR COMMISSION - OR OWNING A STAKE IN YOUR FUTURE!



Is your company committed enough to you to give a substantial number of shares each and every year? - Norsk Data does...

...and is able to do so due to its innovative technology, phenomenal growth and commitment to the real career and personal development of its most important asset - people.

Norsk Data manufactures, sells and supports 16 and 32 bit mini computers and has achieved an average growth of 40% per year over the last ten years. Turnover in 1983 reached £82 million and Norsk Data are quoted on the London, New York, Oslo and Stockholm Stock Exchanges.

The U.K. company have doubled in size each year for the last four years enabling Norsk Data to purchase near Newbury a listed estate home in 110 acres, landscaped by Capability Brown, for their new U.K. Headquarters.

Based at Newbury, positions for Sales Executives exist in the following Sales Groups:

Industry
Business Development Group
Local Authorities and Public Utilities
Ministry of Defence

Candidates should be aged between 25 and 40 of graduate level and have at least three years' sales experience with a major manufacturer of mini or mainframe computers, OEM or Systems House, proven ability of negotiating with major accounts or within the above sectors.

Knowledge of office automation, database management or information systems plus commercial applications would be advantageous.

Based at Newbury positions for Technical Sales Support exist in the Pre-Sales Support Group.

Candidates should be aged between 25 and 35, of graduate level and with proven pre sales experience within the computer industry. Expertise in FORTRAN and other technical programming languages is essential with knowledge of SNA, CQ3 and Computer Aided Engineering an advantage.

A substantial salary, generous share option and pension scheme, Private Pensions Plan and company car are provided.

To own a stake in your future telephone Kathy Sinclair today on 01-637 9611 or send her your CV to the address below.

(0144)

**MANAGEMENT &
EXECUTIVE SELECTION**

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

Real-Time Software CAREER OPPORTUNITIES

£9K to £15K neg.

NW England

The advent of information technology has created the need for highly advanced communications and message processing systems dependent totally on the quality, sophistication and innovation of system software. The opportunity to contribute to the development of future generation systems is currently being offered by a major international force in communications technology in the building of a new specialist team. Current opportunities exist for:-

PROJECT LEADERS

Ref: - W/171

SYSTEMS ANALYSTS

Ref: - W/172

PROGRAMMERS

Ref: - W/173

The ideal candidates will be:-

- 23 to 40 years of age
- Qualified to BSc or equivalent
- Currently employed within a Real-Time software environment (either commercial or defence)
- Conversant with Block-structured high level languages (eg. PASCAL, CORAL) and operating systems such as CONTEXT or RSX11

Some experience of Assembler on minis or micros would also be an advantage but training in all areas will be offered to successful candidates.

You will be involved in challenging work incorporating multi-processing and distributed processor systems in message processing, Command, Control and Information systems and packet switching. The software development will be on VAX 11/780, PDP/11's and 8086's.

The benefits include an excellent negotiable salary and working environment with a full relocation package for the successful candidates with the opportunity to become an integral part of a special team developing tomorrow's technology.

For an initial and confidential discussion please call Bob Archibold on Newbury (0635) 33445 quoting the appropriate reference number or write in strict confidence to:-

ARCHIBOLD RAE CONSULTANTS LIMITED,
(High Technology Search & Selection)
7, London Road, Newbury, Berkshire RG13 1JL.
Tel: Newbury (0635) 33445.

ARC

(8108)

O.E.M. SALES — KEY APPOINTMENTS HIGH BASIC SALARIES — O.T.E. £20,000+

A rapidly expanding and profitable major BRITISH company involved in the Design and Manufacture of Microcomputer Systems seeks Sales Professionals to sell their products to the OEM market place.

The vacancies, which are entirely due to the speed of controlled growth (50% growth target 84/85) are in two vital areas of the company's activities viz:-

Super-Micro Systems UNIX Multi-user and Multiprocessor Systems for Commercial, Engineering and Scientific Environments. (Ref: G1/101)

Memory and Micro Products including Multibus and VMEbus Compatible Memories and Processors and Semi-Conductor and Bubble Memory Systems (Ref: G1/102)

All products represent the latest State of the Art Technology and the Sales Force is backed up by strong Management and Support Teams.

The total income package is impressive, with high Basic Salary and generous Commission/Bonus structure giving earnings in excess of £20,000pa, plus Company Car, Expenses and 5 weeks annual holiday.

If you have experience in selling to OEM's or Key Accounts either for a Manufacturer or Distributor and can provide evidence of a good track record in system or card level sales, contact us quickly in the strictest confidence. We will arrange local interviews to discuss these Outstanding Opportunities.

Send your replies to Geoff Garside, Managing Director

Multibus is a trademark of Intel.
UNIX is a trademark of Bell Laboratories.

Garside Management Consultants Limited
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Tel: 021 491 1447 Fax: 334229

SYSTEMS ANALYSTS PROGRAMMERS

**to £13,000
to £10,500**

IBM 3083, MVS/JES 2, CICS, TSO/SPF — EASYTRIEVE

Established in 1919, this British-owned electrical company based in North London is a modern day success story with group profits for 1983 reaching £13.3 million, an increase of over 50% on 1982.

Following their commitment to Computer Processing with a strong directional strategy to MIS, the company has recently upgraded to an IBM 3083 running MVS.

Parallel developments are required to utilise the power of the new hardware, including commercial online systems and plotting CAD systems within technical areas of the company. Series 1 configurations are also to be implemented at each manufacturing location.

These developments promise to create an exciting and challenging period within the computer services department and we have been retained to assist in the recruitment of highly skilled personnel to complement the existing team.

Applicants for the SYSTEMS ANALYST positions should possess solid Analysis experience gained in an IBM environment and should have taken a project from design through to implementation; exposure to online systems and database techniques is desirable. Successful candidates, who will be self-motivated individuals with the ability to communicate effectively at all levels, will be involved at all stages of systems project development covering Financial, Marketing or Manufacturing areas.

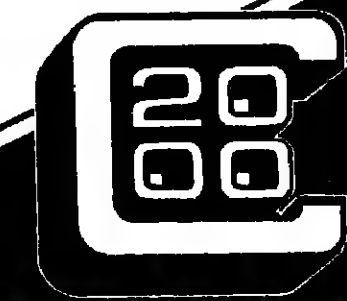
We are also seeking PROGRAMMERS to develop online and batch programs working as part of a project team assigned to a particular development area. A strong IBM COBOL background is the prime requirement for these positions. Although a knowledge of CICS, Database and/or EASYTRIEVE would be advantageous, both in-house and external training will be given where necessary.

In addition to a competitive salary and the opportunity to work in a progressive and demanding environment, the company offers a full range of benefits including Pension and Sick Pay schemes, Share Ownership Option, Saving Related Share Option, Subsidised Restaurant and five weeks' holiday.

For further details of these positions, please contact MELVYN DEARLOVE at Computer Two Thousand.

(8187)

Computer Two Thousand Ltd
Data Processing Consultants
217-218 Tottenham Court Road
London W1P 9AF



Tel: 01-636 7584 (24-hrs)

Contracts in America!!!

\$40,000+ per annum

We have been retained by a major company in the United States of America to supply 30 experienced computer programming personnel for 12-month contracts. The locations are varied but include Baltimore, Boston, Washington, Chicago, Philadelphia and New York. Prospective candidates should be available to start any time between now and June 1984. The skills required are:

- ★ IBM COBOL IMS and ADF
- ★ IBM COBOL with IMS DB/DC
- ★ IBM PL1 with IMS DB/DC
- ★ IBM MARK IV
- ★ HONEYWELL GCOS COBOL with DM IV
- ★ ICL or IBM IDMS with COBOL
- ★ UNIX and C

An excellent package is offered and will consist of the following:

- ★ Excellent rates of pay (\$800-\$900 per week)
- ★ Return air fare
- ★ Accommodation assistance
- ★ Car assistance
- ★ Medical Insurance
- ★ Tax and Legal advice
- ★ Support from our U.S. office in Boston

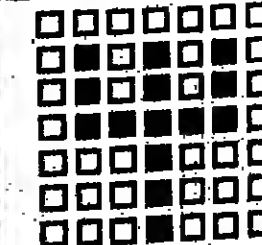
Programmers who are currently in permanent positions are welcome to apply for these positions.

Interviews will be held in Central London during March and April.

To discuss these opportunities please telephone Steve Whiting or Sandra Carey on: Farnborough (0252) 516141.

(8130)

WE CARE FOR OUR CONTRACTORS



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BIRMINGHAM B26 3PS
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Job no 1170

DIRECTOR - INTERNATIONAL Management Information Systems

Interviews in Surrey 13 and 14 March

An American multinational metal packaging manufacturer with its European Headquarters in Surrey seeks an experienced data processing professional to be based in the UK but who will travel regularly through Europe. This position requires a professional individual who possesses creative skills and who is sensitive to a multi-national environment. A very attractive salary and benefits package, including car, will be provided.

Responsibilities include the management of an international data centre (IBM 4341), common systems development functions, serving European sites (IBM 534-36) and coordination of MIS activities in UK, Ireland, Germany, Spain, Italy and Central Europe. Knowledge of accounting, manufacturing, inventory/distribution applications is desirable.

If you are a dedicated results oriented manager who possesses a high level of strategic and planning skills and who enjoys challenge please contact Mrs Suzanne Birch on

Bracknell (0344) 55777 (day) 24117 (even)

ceb executive Professional Recruitment Consultants Limited
PARR HOUSE, 52 BROADWAY, BRACKNELL, BERKS RG12 1AG TEL BRACKNELL (STD 0344) 55777

Kongsberg Systems Technology Limited, a member of the Kongsberg Group of Companies, have a long-standing reputation as innovators in Computer Aided Manufacturing.

Opportunities exist for the following CAD/CAM specialists:

PROJECT LEADER

A FORTRAN specialist, who can lead a small team of software engineers in coding, design, testing, installation and support of software for mechanical NC tape preparation. The successful candidate will possess a degree or equivalent in a science or engineering subject and have at least 4 years' FORTRAN experience using DEC computers running under RAS and/or VMS.

SOFTWARE ENGINEERS

NC part programming experts, to be part of the active team of software engineers. The successful candidates will possess recognised mechanical or production engineering qualifications and have at least 3 years' experience using a CAD/CAM system. The ability to write post processors in FORTRAN would be advantageous.

Highly competitive salaries are offered, together with 20 days' annual holiday, free BUPA and Life Assurance Scheme. A contributory Pension Scheme is available after qualifying period.

Please write, with c.v. or telephone for an application form, to:
Sally Pearson, Kongsberg Systems Technology Limited,
Priors Way, Maidenhead, Berkshire SL6 2HR.
Telephone: (0628) 39292.

Ferranti plc

Programming Management ...at the centre of a high technology, expanding company

The Internal Computer Services department, based at Hollinwood, Manchester provides commercial data processing services to the Ferranti Group companies — using ICL 2966 mainframes and ME29's. Conversion from George III to VME 2900 is currently underway.


As Assistant Programming Manager you will be responsible for the organisation and motivation of 15 programmers in four project teams engaged in writing new applications programs for financial and manufacturing systems. Current developments include the use of IDMSX and TPMS.

The planned expansion and development of our Internal Computer Services will lead to broader responsibilities and offers excellent scope for career extension. Salary and benefits are those expected of a large market leading company. Candidates with relevant ICL Cobol experience and evidence of managerial ability should send c.v. or telephone for an application form to: J.H. Hughes, Personnel Manager — Central Services, Ferranti plc, Hudson Street, Hollinwood, Lancs. Tel: 061-681 2000.

FERRANTI
selling technology

REAL-TIME SOFTWARE ENGINEERS

CHIPPENHAM WILTSHIRE
SALARIES TO £14K



Westinghouse Signals Ltd., a subsidiary of Westinghouse Brake & Signal Company Ltd., founded in 1881, has achieved a world-wide reputation for safe and reliable control of railway systems in the area of signalling, automatic train control and telecommunications. Considerable experience, allied to an in-depth knowledge of advanced technology, has enabled Westinghouse to pioneer many new concepts in this field of engineering. To maintain their position as market leaders, Westinghouse wish to recruit a number of experienced but flexible Software Engineers to work on major new contracts worldwide. Current projects include work on significant railway investments in New Zealand and Singapore. Opportunities exist to participate in all stages of the project, from the initial design through to site testing and commissioning activities. The majority of systems are based on Hewlett Packard 1000 series minicomputers with programming being done in HP Assembler language. More recent systems have been implemented using Corel 68 and there are several projects involving Z80, Intel 8085 and T1995 micro-processors being developed currently.

Westinghouse Signals

Software Project Leader

You are likely to have a minimum of six years experience in real-time software design and implementation, and experience of working with mini and/or micro computers using high and low level languages. You will be expected to lead a team of software staff, the size of which depends on the nature of the project (anything from 2 to 7 is typical). A proven track record in the implementation of projects from concept to installation is essential.

Senior Systems Analyst

You must have experience of working with mini or micro computers using high level and low level languages. With a minimum of four years relevant experience you would be expected to join a software team and undertake detailed systems design work. Previous team leadership would be an advantage.

Systems Analyst

Having spent at least three years in a real-time engineering environment and gained experience of software design, coding and integration you would be expected to undertake system and program design work to the constraints given by more senior members of the software team. Additionally, you would be expected to oversee the work of Programmers and Analyst/Programmers who will implement your designs. Again, experience of mini or micro computers, using high or low level languages is essential.

Analyst/Programmer

You will have experience of software coding and implementation, previous program design experience would be an advantage. Knowledge of such languages as Coral, Algol, Pascal and Assembler, as well as exposure to mini or micro computers is required. Working closely with the

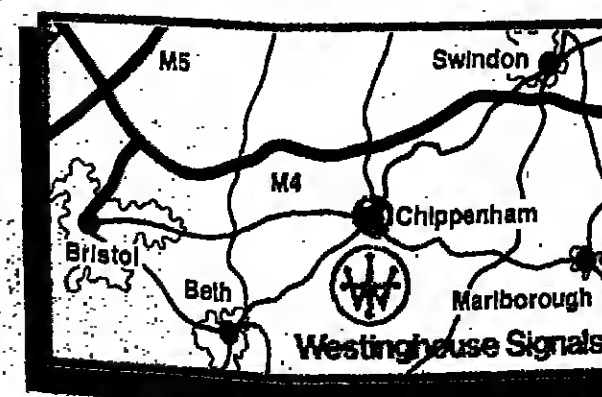
programmers, you will be required to implement the designs provided by the Systems Analysts.

Programmers

A number of opportunities exist for Programmers with a minimum of 12 months experience of software coding and integration, preferably gained in a real-time engineering environment. Knowledge of Coral and/or Assembler is a requirement, but other high or low level language knowledge gained on mini or micro computers would be considered.

In addition to a very attractive salary and excellent career opportunities, Westinghouse offer a number of additional benefits which include an outstanding relocation package where applicable and flexible working hours.

For further information, please contact Mike Beesley, Sanderson Computer Recruitment Ltd, 41/43 Baldwin Street, Bristol 1. (0272) 211741. When writing please supply a telephone number at which you may be contacted.



Sanderson
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IBM PROGRAMMER/ANALYST CITY £9,000 + Mortgage

To join a small team developing and maintaining CICS, DB/1 programmes. Training will be given to candidates with 1-2 years IBM COBOL experience within a DOS environment. This is an excellent opportunity for a keen ambitious young person who would like to move into an on-line environment using the latest database techniques. Excellent benefit package which includes subsidised mortgage, health insurance and STP.

W/W 2463

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R/W 4048

IBM COBOL PROGRAMMERS CITY TO £11,500

Can you offer around 3 years COBOL, CICS and DB/1 experience, and do you wish to enhance your professional skills through challenging and demanding projects? Then this job is for you. Very interesting development projects and excellent prospects.

R/W 4332

UNIX CITY £12,500

My client, an international banking group, requires an experienced programmer for its D.C. expansion plans. This will be a challenging appointment with an organisation dedicated to making the best use of its sophisticated programming facilities. A thorough knowledge of UNIX is essential on any machine and experience in a financial environment would be an asset. All banking background apply.

M/W 4256

These positions are just a brief selection from our extensive database of jobs in London and the South-East. If you desire see a position advertised for your particular skills, or are considering re-decisioning or a change of hardware, a quick phone call will put you in touch with a consultant specialising in your field. 70% of jobs in this industry are never advertised. Why not let us tell you about some of them? We look forward to hearing from you.

WANG/PROGRAMMER CITY £11,000 non.

This is an excellent opportunity for a D.P. professional to take up a key position within this well established insurance company. The company house Wang VS mini computers and ideal candidates will have a minimum of 2 years experience using COBOL. You will play an integral part from feasibility to implementation of a range of insurance and business systems. This is an interesting position offering career prospects, exciting development projects and a pleasant and flexible working environment.

M/W 4345

IBM ALL AREAS £8-14,000

We have too many positions to list our offers are in the banking, manufacturing, retail, insurance and software fields and are seeking from 12 months to 5 years IBM or RPG III. If you have 2 years COBOL, ASSEMBLER, RPG II or RPG III. If you would like to further your career and increase your salary in a challenging environment. Call us for further details of these positions.

COBN

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I have a number of companies with openings for ICL people whose experience has been gained on any ICL configuration. My clients include insurance companies, technical engineering and software houses, all offering interesting and challenging work to the right ICL under VME or VME/B or ME29 with IDMS or TPA. While you could be of particular interest to any of these companies, the work offered is mainly development projects, and relates very much to experience, but will be commensurate with your background. Telephone now, to discuss your requirements and career prospects.

B/W/GBN

IBM MVS COBOL W. LONDON TO £12,000

My client is internationally renowned in the leisure industry and is seeking an analyst/programmer to join a user support group, developing and supporting accounts, sales and marketing applications. They have recently converted to MVS and require a minimum of 2 years IBM COBOL, preferably with MVS and on-line experience to join a CICS team. Lots of user contact and sound promotion prospects.

C/W 4330

FORTRAN PROGRAMMERS MIDOX. £10,500

An interesting opportunity with a leading travel organisation offering progressive career openings to skilled Fortran programmers. Initially, you will work in small professional teams developing on-line transactions, eventually becoming responsible for seeing projects through from feasibility to implementation. This company's exceptional growth rate has been achieved by its business objectives and this will be a chance to join an expanding unit and make a valuable contribution to its future.

M/W 4246

ICL PROGRAMMERS - ALL LEVELS CENTRAL LONDON £9-12,000

My client is in the financial sector and requires a number of additional COBOL programmers at all levels to join their development team. The ideal candidates should have 2 years + ICL 2900 VME and some experience of IDMS or TPA. QM you may have a good knowledge of Assembler or Pascal on any ICL machine. This is an outstanding opportunity to further your skills and become involved in an interesting and stimulating environment.

B/W 4050

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Electronics Dept.
W. Vinten Limited
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Vinten

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Glaxo Export Limited

SYSTEMS ANALYST circa. £13,000 p.a. plus benefits ANALYST PROGRAMMER circa. £11,800 p.a. plus benefits

LONDON N1.

Glaxo, the well known multinational group of pharmaceutical companies with annual sales in excess of \$1,000 million are seeking to employ two additional people to assist in the development of management information systems for the parent company.

The environment is based on Hewlett Packard 3000 hardware running under MPE using IMAGE, ASK and GENASYS. Cobol is the main programming language.

SYSTEMS ANALYST

Candidates should have a minimum of 4 years d.p. experience together with online and database skills. Duties will include the analysis and design of management information systems in line with end user requirements and some supervision and training of junior staff. Preference will be given to candidates with a good financial background and previous experience with HP 3000 kit would be an added advantage.

ANALYST PROGRAMMER

Candidates must have at least 2 years d.p. experience including 1 years analysis and should have worked on HP 3000 equipment previously. Online development skills will be regarded as a distinct asset as would any knowledge of financial systems and/or modelling languages.

FURTHER INFORMATION

The positions are based at Glaxo Export headquarters in London N1 with travel facilities close to hand. The company maintains a high level of investment in its personnel has an excellent reputation for training and development, and can offer a wide variety of career progression. In both cases candidates should have been educated to degree level.

INTERESTED?

For a fuller presentation of the challenges and opportunities presented by these two positions please contact Chris Morrow of Total Selection Ltd. who have been retained to advise on the appointments.

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GST

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Cambridge

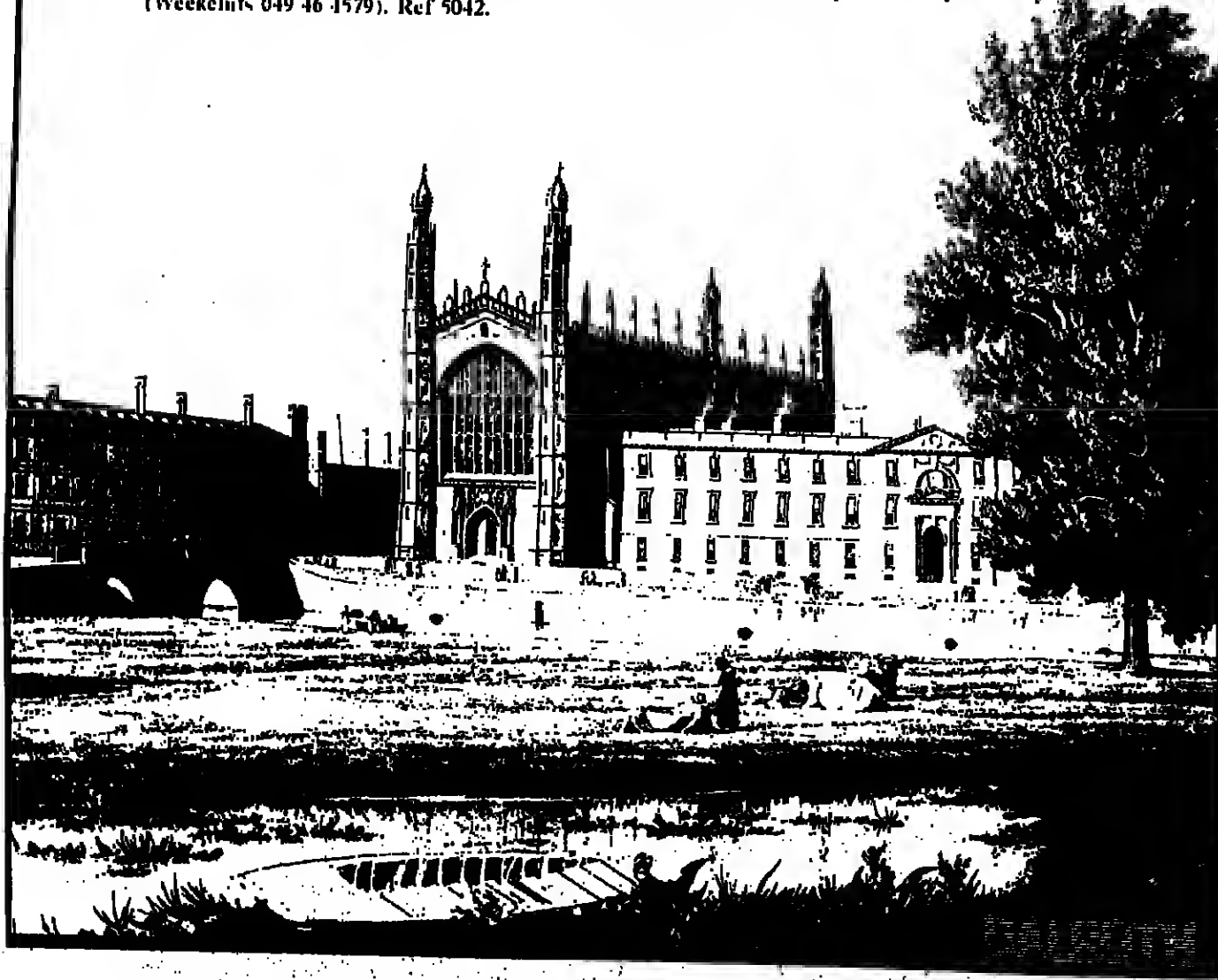
£8000 to £16000 per annum + car and benefits package over £3000.

GST requires creative professional Programmers, Designers and Consultants who will enhance its CAD/CAM group working near Cambridge, a beautiful and historic city and arguably Europe's leading centre of computing excellence.

GST is involved in many interesting new CAD/CAM projects including image processing, design and process industry software, engineering management systems, 3D modelling, graphics and related systems.

Applicants with proven ability, and experience of Fortran and one or more of Prime, VAX, Apollo or IBM will have a distinct advantage. Within the CAD/CAM group you will have the opportunity to contribute to software development projects or to work closely with clients to help them use CAD/CAM equipment effectively in British industry.

To apply please send a full CV to GST's consultant Jenny Dalrymple-Hay (or Ian Murray West) at Dalroth and Partners, 4 Half Moon Street, Mayfair, London W1 or telephone for more information or an application form on 01 493 2947 8am - 10pm Monday - Friday. (Weekends 049 46 1579). Ref 5042.



SENIOR COBOL PROGRAMMERS

to £14,000

3 to 4 years in commercial environment. To work on VAX 11/750 in CROYDON.

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£10,000 +

IBM background. Ideally mainframe and GSO. Based in WEST SUSSEX to support 20 European installations.

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Micro

COMPUTER SPECIALIST

with good technical background in software and hardware.

Acquisition of French helpful but not required.

Main responsibilities would be to help integrate the use of an important new micro with existing mainframe VAX Data Systems.

Please send detailed cv, references, photo, to:

Personnel Department
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Two system analysts

Who should be in possession of:

- a good knowledge in French, • a university degree, • 3 years experience minimum, • a perfect knowledge of IBM assembler, • experience of application with IBM Paris system.

We offer:

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Please send C.V. to: GSI, Mme Pereira, 5 Villa Brune 75014 Paris (France).

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1-2 YRS COBOL?
HEWLETT PACKARD?
LIKE USER CONTACT?
PLENTY OF POTENTIAL?

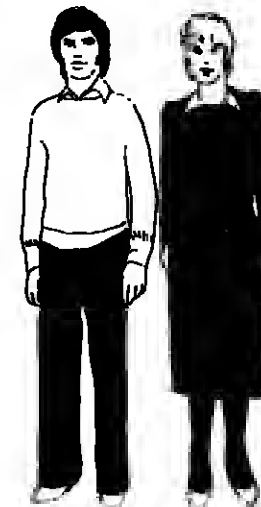
£9500

The company:
We are an international Marine Insurance company based in Central London.

Our requirements:
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The department:
Busy, expanding and involved in developing systems on a HP3000 using IMAGE QUERY VIEW QUIZ QUICK AND ADAGER

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Salary and package are commensurate with this position in a successful and expanding Company.

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StorageTek

(0172)

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P-E Computer Services Limited, a long established software house, regularly supplements its own staff resources with freelance computer professionals. Currently we have many requirements for contracts starting over the next month. All grades of staff are required to work both in the north and overseas.

Whether you are available now, in the near future, or are just considering freelance work for the first time, discover P-E's approach to freelance employment by telephoning or writing to Peter Moore at the address below.

PE

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212 Weahway Road, Sale, Cheshire M33 1RN. Tel: 061-905 1770

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Keep your options open

To £11,500

London and Swindon

Primarily concerned with prestigious department stores, this public company has recently established a small DP Audit Team, to enhance the operational and financial effectiveness of its corporate audit function. You will have the unique opportunity to view all aspects of the company's nationwide business and advanced computer developments, using a range of ICL, Honeywell and IBM equipment.

Your responsibility as Programmer is essential for further DP Audit development and requires a mature personality and business awareness. You will be programming to produce audit software, using audit packages and Cobol programs. Although based in central London, you will regularly work independently at the group computer centre in Swindon.

Ideally you should have 18 months commercial programming using Cobol on ICL 2900 under VME/B, with a good working knowledge of MAC, and preferably experience of IDMSX database and general ICL utilities. You will be encouraged to advance your career by in-house and external training, and have an exciting range of promotion opportunities.

Attractive benefits include a 9-5 working day, staff discount, free lunches, travel and hotel expenses. Candidates will be considered from either London or Swindon locations.

To arrange an early interview, phone Susan Atkinson of Cripps, Sears & Associates Ltd., Personnel Consultants, 88-89 High Holborn, London WC1V 6LH. Tel: 01-404 5701 (daytime) or 01-838 1580 (evenings or weekends).

Cripps, Sears

(0173)

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If you are a COBOL programmer with at least 1-3 years experience of commercial programming and/or systems analysis, then we would like to hear from you.

Butel is a leading Data General Software House, specialising in turnkey projects and packages on both 16- and 32-bit computers. In our fast growing business there are excellent opportunities and rewards. Salary negotiable up to £10,000, according to experience, plus BUPA and other benefits.

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Ad Ref: 1988

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Division of Computing Information Technology

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Senior Lecturer/Lecturer II
Lecturer II/Lecturer I
Research Assistant (Lecturer I)

Advancement posts are available due to expansion of courses in Information Technology. Candidates should be graduates (or equivalent) with experience of programming in one or more languages (e.g. COBOL, Assembler, Basic) together with experience in areas such as Data Processing, Systems Analysis and Design, Real Time Systems, Office Systems, Graphics, Operating Systems.

Computing will teach on a range of industry linked Higher Diploma sandwich courses, part-time BCS courses and specialist short courses.

Salaries:
Principal Lecturer £12,519 - £15,744
Senior Lecturer £10,685 - £13,443
Lecturer II £7,215 - £11,568
Lecturer I £5,640 - £9,735

(All are full-time posts, in addition to the above rules) Send SAE for further details and an application form to be returned within two weeks of the date of this advertisement to the Vice Principal, Slough College of Higher Education, Wellington Street, Slough SL1 1YC. Berkshire is an equal opportunities employer.

Slough College

GRAVESHAM BOROUGH COUNCIL ASSISTANT COMPUTER MANAGER £10,242-£11,052

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Gravesham uses both ICL and Microdata processors. All new development is carried out on the Microdata SEQUOIA and 41 interactive terminals are spread throughout the Council's departments.

The successful applicant will head a team of four development staff and deputise for the Computer Manager.

Gravesham, bordering the Thames in North Kent, is within easy reach of London and the coast. Relocation expenses will be paid where appropriate. For application form and job description please contact Personnel Officer, Civic Centre, Gravesham. Tel: Gravesham (0474) 64422, extension 273. Closing date 9th March, 1984.

(7088)

LECTURER II SENIOR LECTURER IN COMPUTING (2 POSTS)

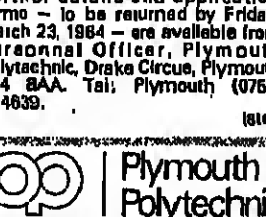
£7,215-£13,443
(Level of appointment and starting salary dependent upon qualifications and experience)

Required to teach on Computing and Information Systems courses. Applicants must have relevant industrial, commercial, research and/or teaching experience.

The Department is active on a number of research fronts and is keen to foster new activity in the field of intelligent knowledge-based systems. Applications are welcomed from researchers whose post-graduate/postdoctoral studies are nearing completion.

Permanent and temporary (2 to 3 year) contracts are available. Further details and application forms - to be returned by Friday, March 23, 1984 - are available from Personnel Officer, Plymouth Polytechnic, Drake Circus, Plymouth PL4 8AA. Tel: Plymouth (0752) 29-0039.

(8106)



UNIVERSITY OF LIVERPOOL Computer Laboratory HARDWARE ENGINEER

Applications are sought from graduates with experience in micro electronic hardware design and construction. To assist in developing the hardware aspects of the computing services, particularly in the field of microcomputers and communications. A good first degree in Electronics or related subject essential.

Salary on scale, £7,180-£11,815 p.a. Possibility of promotion to scale rising to £14,125 p.a.

Further particulars and application forms may be obtained from: The Registrar, The University, P.O. Box 147, Liverpool L69 3BX.

Quota Ref. RV/228/CW.

(8074)

UNIVERSITY OF GLASGOW Computing Service APPLICATIONS PROGRAMMER AND ADVISER

Interested in applications programming, and in helping others with their programming problems? Further particulars of a vacancy, for which the salary is currently in the range £7,180-£11,815 p.a. per annum (but due for revision w.e.f. 1st April), may be obtained from: The Academic Personnel Office, University of Glasgow, Glasgow, G2 8QQ. Closing date for applications: 30th March, 1984.

In reply please quote Ref. NO. 8100/2F.

(8067)

University of Birmingham Centre for Computing and Computer Science CHAIR OF COMPUTER SCIENCE

Applications are invited for a new Chair of Computer Science which will become available from 1st October, 1984. The appointment is intended to strengthen the research base at the Centre, and to ensure that the Centre is well equipped to carry out research in a wide range of computer applications.

Application forms and further particulars from: The Principal, Stevenson College of Further Education, Bankhead Avenue, Edinburgh EH11 4DE. Tel: 031 463 8181.

(8261)

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(Based at Acton Town Hall)
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Experience in operating data communication equipment is essential. Previous applicants will automatically be reconsidered. Please quote reference 097FD.

Closing date 15.3.84.

Application forms obtainable from The Personnel Office, Room A/204, Town Hall, Annexe, New Broadway, Ealing W5 2AT. Telephone: 01-845 1395 (24 hour service).

(8185)

DARLINGTON HEALTH AUTHORITY TREASURER'S DEPARTMENT COMPUTER SERVICES AND DEVELOPMENT OFFICER

Senior Administrative Grade - Salary Scale £7,404-£9,025 (Grading currently under review)

We are looking for an experienced person to maintain and develop the micro-computing network facilities within the Darlington Health Authority.

The person appointed will be responsible for the provision of computing services including the analysis, programming and day to day operational requirements of computer systems. The post holder will be working on ICL DRS systems equipment.

The post offers excellent training facilities (including ICL training course) and good career prospects for persons of this right calibre. The present incumbent has been promoted within the H.A.S.

Application forms and job descriptions can be obtained from the Personnel Department, Memorial Hospital, Hollybush Road, Darlington, Tel: 0325 480100, ext. 334/2.

Closing date March 18, 1984.

Applicants who have not heard by March 30, 1984 may assume that they have been unsuccessful.

(8178)

monklands district council

The Council invite applications from suitably qualified and experienced persons for the following post:
DEPARTMENT OF FINANCE AND MANAGEMENT SERVICES
The Computer Services Section provides central computer facilities for the District Council and a network is being developed to integrate all the Departmental mini and micro computers. The Computers are mainly I.C.L. (ME29, 2004, System 25 and various DRS) but include other manufacturers (Zilog, Hytec, Torch, Rai and Acorn).

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APV.£9,660-£10,554 POST REF CQ11

The successful applicant to this new post will be responsible for the systems analysis and programming of several important projects including the development of the Stock Control/Job Logging System within the Direct Works Section, also a Schedule of Rates sub-system for D.L.O. Costing. Applicants must have at least five years' relevant computer experience, two of which should have been in systems analysis and must possess an appropriate University Degree or Membership of the British Computer Society. Experience in C.I.L. Cobol and/or experience on a System 10 or 25 will be essential and a knowledge of ICL communications protocols would be an advantage. N.J.C. Conditions of Service for A.P.T. & C. Staff will apply. Anon-contributory Group Life Assurance Scheme is in operation as well as the Local Government Superannuation Scheme.

Application forms and job description are available from the Personnel Office, Municipal Buildings, Dunbarton Road, Coatbridge ML5 3LF, Scotland (0238-24941, Ext. 231). Completed form must be returned by March 10th, 1984.

(8100)

INNER LONDON EDUCATION AUTHORITY Computer Officer (Professional Officer B/C)

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Application forms and further details are available from the Education Officer (EO/516/18), Room 368, The County Hall, London SE1 7PS. (Please enclose an SAE.)

Closing date for the return of completed applications to the above address is 15 March, 1984.

Suitable for job sharing.

ILEA is an equal opportunities employer.

(8102)

TEESSIDE POLYTECHNIC We are an 'EQUAL OPPORTUNITY EMPLOYER' DEPARTMENT OF COMPUTER SCIENCE Applications are invited for the post of: DEPARTMENTAL PROGRAMMER

Post Ref. No. F.T.O.38

The successful candidate will join a team of technical support staff in a large academic department with wide-ranging teaching and research activities. Current development includes a VAX 11/750, an Stheno system and a variety of micro-computers. Applicants should have experience of programming in high-level languages (Pascal and Cobol would be advantageous). Recent experience in an academic environment and a formal qualification in Computer Science are preferable, but training can be provided in specific areas if necessary.

Grade: Scale 4, 7-12 according to qualifications and experience.

Further particulars and application forms from: The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Telephone: Middlesbrough (0542 21617), Extension 414.

Closing date for applications: March 23, 1984.

(8174)

M R C CLINICAL RESEARCH CENTRE (NORTHWICK PARK HOSPITAL) WATFORD ROAD, HARROW MIDDLESEX HA1 3UJ.

MEDICAL RESEARCH COUNCIL

HEAD OF COMPUTING AND STATISTICS DIVISION

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Further particulars can be obtained from the Director's Office, Clinical Research Centre, Watford Road, Harrow HA1 3UJ. Telephone 01-884-8311, ext. 2220.

Closing date for applications: 17th March 1984.

(8174)

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(8097)



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March 8 Issue

OPPORTUNITIES IN THE MIDLANDS

You naturally demand the most from your computer hardware and that means you need professional staff with the necessary database experience to make sure your system works best for your business.

If you are currently recruiting professional dp staff, then the March 8 issue of Computer Weekly provides an added bonus to help you find the people you are looking for. Our special feature, highlighting the wide range of opportunities for dp staff in the Midlands, will create an ideal platform for you to spell out the advantages of working for your organisation.

This is just one of many career-linked features to be published during 1984. Our aim is to talk to individual groups of readers, both as employees and as people with particular skills and problems and is just one indication of Computer Weekly's commitment to providing the platform needed by recruitment advertisers when seeking staff.

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Computer Weekly

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SALES TRAINING, MARKET RESEARCH, RECRUITMENT

SALES BIT

Quality of Management - 85

A trainer must have the talent to convince

THE staging of sales training is for many companies a process that seldom gets beyond the point of good intentions.

Everybody acknowledges that selling and product training is an essential function of an effective sales organisation; that all salespeople need to achieve at least a minimum threshold of selling skill and product knowledge and that this basic requirement should be sustained and augmented on a continuing basis. Yet when it gets to the crunch either the budget won't allow it or nobody wants to take time out from the field. (Perhaps a greater reality is the sales manager's lack of confidence in his own ability to get it together).

That is a sad commentary on the quality and perception of some sales managers, for any sales team that is not developing and generally 'keeping up with the art' is not only failing to achieve its full potential but also at risk of falling apart as those individuals who feel a strong need for personal progress and development decide to go where they can better obtain it.

But let us discuss the good guys who have got their act together and

probably be running his own independent outfit and earning a lot more than the typical company sales afford, or be a 'big wheel' in a major training outfit.

An in-house sales trainer has to be an experienced and accomplished salesman with a talent for teaching and organising if he is to be of any real value to his company. Sadly, some so-called sales training managers are no more than failed salesmen who have been unable to find a safe hidey-hole in the relative warmth and tranquillity of marketing, and therefore see training as an acceptable alternative that is sufficiently far away from the 'sharp end' as to cause them minimum discomfort.

I recall a sales trainer finding himself harassed by a particularly negative and 'bolshy' salesman who apparently wanted everyone to know that he objected to having to attend this particular sales training course, besides which he didn't feel he needed any sales training. After all, that was strictly for new trainees!

He raised a barrage of pointed questions and negative remarks and did whatever he could to be

Some so-called sales training managers are no more than failed salesmen who have been unable to find a safe hidey-hole in the relative warmth and tranquillity of marketing

made a firm commitment to introduce or continue with sales and product training.

One of the first decisions to be made is, who will do it - some salesperson high-fighter from inside or outside the company, or do you mess it up yourself?

There are two important points to remember about sales training: First, knowing all about the product and how to sell it is not sufficient qualification for imparting and implanting knowledge; the skill of being able to teach is paramount.

Secondly, responsibility for product training cannot effectively be sub-contracted to external organisations. No one knows your product as thoroughly as you do, particularly in terms of its exceptions and idiosyncrasies; its problems and opportunities. Using outsiders to put across such information is an absolute statement of management failure.

It is effective, if your sales organisation is big enough to justify it, to have your own full-time sales trainer.

But having a company sales trainer doesn't necessarily mean that all courses will be generated purely from internal resources. The primary function of such a person is to produce whatever training is necessary, in accordance with the demands of the sales organisation. In many instances this takes the effect of administering and co-ordinating courses which are wholly or in part provided by others.

In some major corporations some of the better salespeople are obliged to spend a period in the education department as part of their development towards management. That's all well and good, it was the practice at IBM when I was there, many years ago, and it didn't seem to do them any harm.

But few companies have a budget large enough to justify a full-time sales training manager. More to the point, sales training, as opposed to product training, is a much sought-after skill for which many specialist training organisations are prepared to pay highly. If a sales trainer is really good he will

disruptive. At first the other salesmen on the course either disregarded him or thought him antics rather immature and silly. But the sales trainer couldn't handle the situation. The other students soon perceived this weakness and the sales trainer's credibility was lost.

In next to no time the whole class switched itself off and generally proceeded to act as stupidly as the original perpetrator. Before the second day was completed the course was cancelled, and the trainer departed ignominiously.

When asked why they had behaved in such an abominable manner the salesmen concerned sheepishly admitted they didn't really know other than it was possibly a subconscious protest about being 'dragged out of the field' to be confronted by someone whom they naturally assumed would be an expert, only to find he had nothing to teach them.

If salespeople are obliged to attend training courses they expect to get something positive out of it that they can put to immediate use in the field and thus improve their sales performance.

What it all boils down to is professional credibility. As with the salesman before the customer, the sales trainer must be totally convincing in terms of his preparedness, ability to perceive and satisfy need, overcome objections and persuade people to his way of thinking.

That makes it an extremely demanding job that requires a lot of talent, and usually goes with a salary that is significantly less than that of the better salespeople they are training.

Hands up, who wants to be a sales trainer?

Alan Williams

The crossword appears next week.

PUZZLE ANSWER

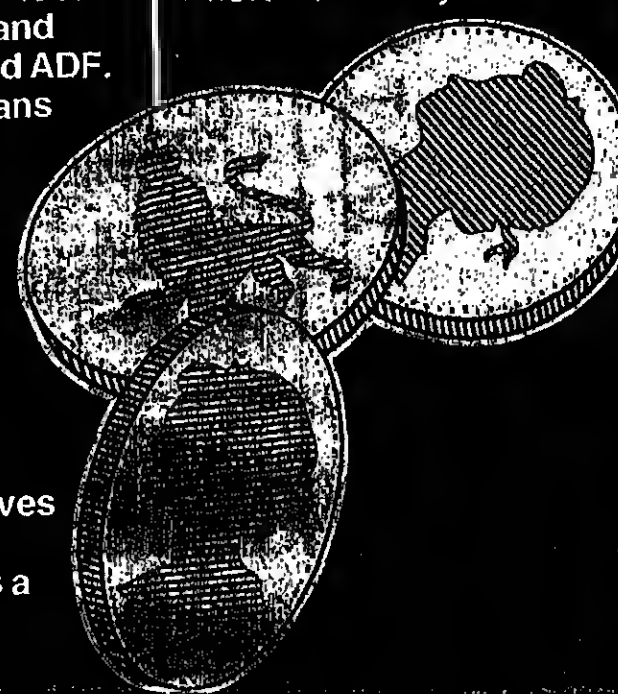
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